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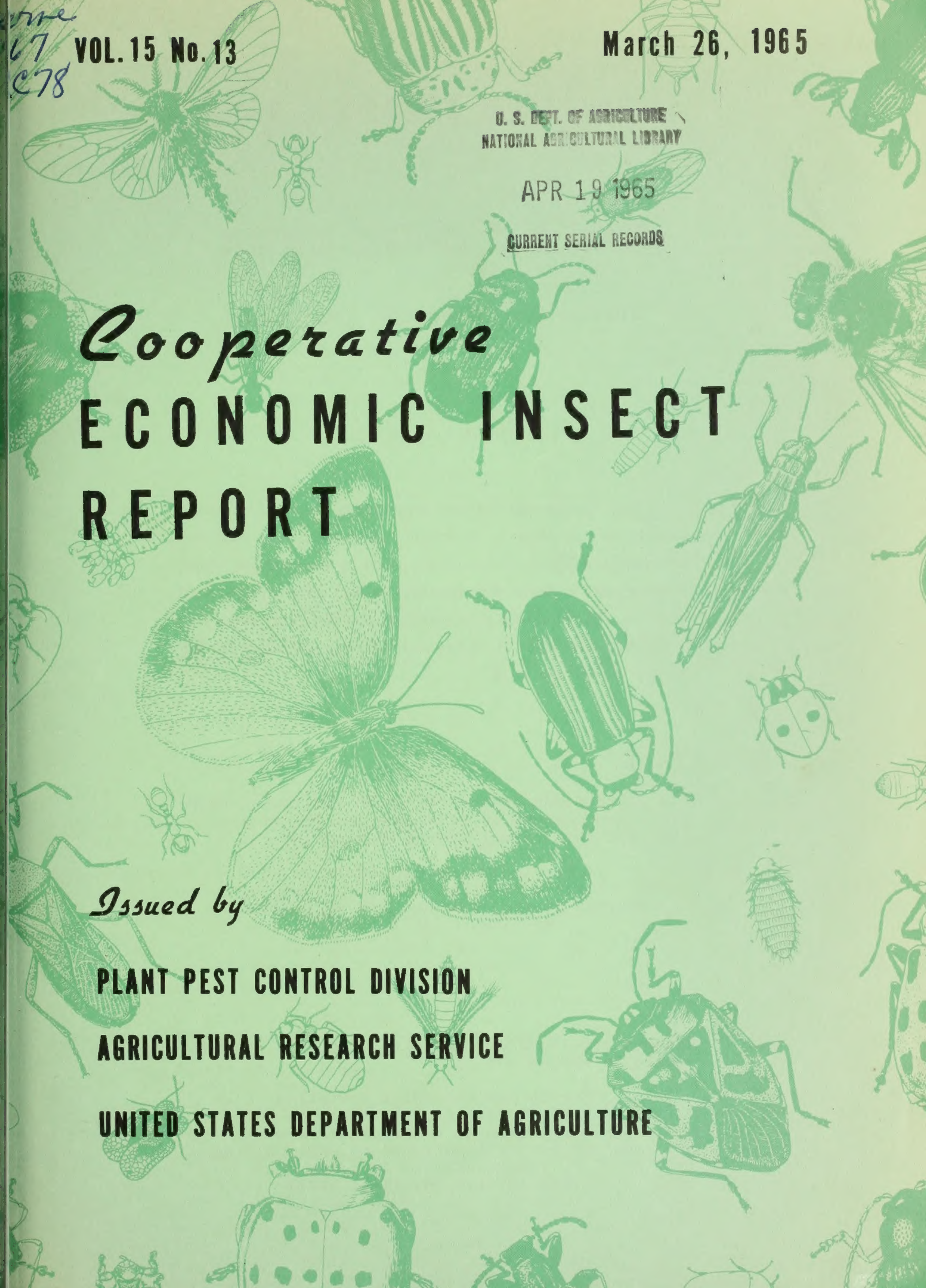

Cooperative ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 15 March 26, 1965 Number 13

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

GREENBUG and BROWN WHEAT MITE increasing in wheat in Tillman County, Oklahoma. Brown wheat mite also general but populations low over panhandle area of Texas. (p. 239). PEA APHID extremely heavy in some alfalfa in Maricopa and Pinal Counties, Arizona, and severely damaging alfalfa in Lea, Chaves and Eddy Counties, New Mexico. SPOTTED ALFALFA APHID also causing severe damage to alfalfa in these New Mexico counties. ALFALFA WEEVIL adults appearing in alfalfa in Maryland, Colorado and Utah, and larvae active in Alabama, Arkansas and Missouri. (p. 240).

GREEN PEACH APHID stem mothers increasing on peaches in Mesa County, Colorado. CITRUS THRIPS increasing on new growth of citrus in Yuma and Maricopa Counties, Arizona. (p. 241). POTATO PSYLLID populations increasing on weed hosts in many parts of Maricopa County, Arizona. Heavy summer buildup of a FALSE CELERY LEAF TIER (*Udea profundalis*) indicated in Fresno County, California. (p. 242). POTATO TUBERWORM found in Iowa for first time in many years. (p. 247).

DOUGLAS-FIR BEETLE likely to cause considerable mortality of Douglas-fir stands in western Oregon during 1965. Serious infestations of a CONIFER SAWFLY (*Neodiprion taedae linearis*) indicated in local areas of south central Arkansas. (p. 243).

DETECTION

A SCARAB (*Anomala ausonia* Er.) reported for the first time in the United States. (p. 247). A CELERY APHID (*Aphis heraclella*) reported for the first time from Michigan. (p. 242). WESTERN CORN ROOTWORM (*Diabrotica virgifera*) reported for the first time from 25 counties in Iowa. (p. 240). PYRIFORM SCALE (*Protopulvinaria pyriformis*) reported for first time from San Diego County, California. (p. 244).

SPECIAL REPORTS

Small Grain Pest Survey in Texas. (p. 239).

Potato Psyllid Survey, Spring Breeding Areas of Arizona and California - 1965. (p. 242). Survey indicated a potentially moderate migration this season.

Status of the Screw-worm in the Southwest. (p. 245).

Estimated Losses and Production Costs Attributed to Insects and Related Arthropods Attacking Clover and Alfalfa Hay and Hay Crops in Illinois in 1964. (p. 250).

Summary of Insect Conditions in the United States - 1964
- Truck Crop Insects
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  - Miscellaneous Garden and Truck Crop Insects. (p. 271).

Reports in this issue are for week ending March 19, unless otherwise indicated.

WEATHER OF THE WEEK ENDING MARCH 22

It was a cool or cold week nearly everywhere as one of the worst blizzards of the winter came to the northern Plains. There were tornadoes to the South while the West had sunny, dry conditions.

TEMPERATURE: The large late winter storm at midweek spread arctic air rapidly south and southeastward reaching the gulf coast on Thursday and the Carolina coast and northern Florida by Saturday. Freezing temperatures came to the Rio Grande Valley and northern Florida. Zero readings reached into New Mexico and part of Kansas and covered much of Iowa, Wisconsin, and Michigan. Jackson, Mississippi, reported 19° on 21st. High readings during a 4-day period at Ft. Smith, Arkansas, were 79°, 66°, 39°, and 30°. Weekly average temperatures were above normal in much of California and Florida but below normal elsewhere over the 48 States. Portions of the northern and central Great Plains averaged from 10° to 26° below normal and more cold air was moving into that area at the weekend.

PRECIPITATION: Most areas in the western half of the Nation received less than 0.25 inch during the week. It was another sunny and dry week in Washington and Oregon with indications that March will set several records for high sunshine and low rainfall over an extended period of time. Total precipitation in the East was generally 0.5 to 1.5 inches with thundershowers in the South and snow in the North. The south edge of snow cover at the weekend was generally along a line from Omaha to Philadelphia.

STORMS: A tremendous late winter storm moved through the Middle West and Great Lakes region during the period Tuesday to Friday. A deep and vigorous low moved from Colorado to Kansas and then northeastward with the usual thundershowers to the south and heavy snow with strong winds to the north and west of the storm path. Scattered tornadoes occurred in Oklahoma, Kansas, Illinois, Indiana, Tennessee, North Carolina, Mississippi, and Alabama. Scattered property damage was considerable, many persons were injuried, and there were some deaths. The severe blizzard occurred over Minnesota, Wisconsin, and neighboring areas with schools closed and many roads impassable for several days. Duluth, Minnesota, reported 18 inches of snowfall in 24 hours with maximum depth on the ground an amazing 48 inches!

SPRING DELAYED: Spring growth and activity should be in full swing from central Texas to South Carolina. This cold spell is only the most recent phase of a persistent pattern. Average temperatures for the first 21 days of March are from 5° to 8° below normal from Texas to the Carolinas. Since daily mean temperatures normally rise about 0.25 to 0.20 degree per day during this season, this suggests that spring is at least 3 weeks behind schedule throughout that area. Other areas are even colder compared to normal with the western Corn Belt 8° to 11° below normal for 3 weeks. The eastern Corn Belt is only 2° to 4° below normal while New England is warmer than normal for the period. March has also been rather cool in Arizona, New Mexico, and Utah but temperatures have been near normal in other parts of the Far West. (Summary supplied by U.S. Weather Bureau.).

CEREAL AND FORAGE INSECTS

GREENBUG (Schizaphis graminum) - NEW MEXICO - Remains light on small grains in De Baca, Quay, Roosevelt, Curry and Lea Counties; ranged 1-4 per linear foot in fields checked. (N.M. Coop. Rpt.). TEXAS - Very light on small grains in Delta County. (Turney). Ranged 0-25 per row foot near Hereford, Deaf Smith County; 1 field with 50-150 per foot; not yet alarming. (Daniels). OKLAHOMA - Increasing; ranged 15-50 per linear foot in 6-inch wheat in Tillman County; heaviest in Grandfield area. Other counts per linear foot in 3 to 4-inch wheat averaged 2 in Grady County, 15 in Kiowa and Jackson Counties and 2-10 in Payne County. (Okla. Coop. Sur.). GEORGIA - Light on small grains in southern area. (Johnson). NORTH CAROLINA - Noted on small grain in Wake County March 3; det. by C. F. Smith. Damaged small grains in that county March 1. (Mount).

Small Grain Pest Survey in Texas - Survey made March 9-11 in following 14 panhandle counties: Sherman, Gray, Carson, Donley, Collingsworth, Wheeler, Hartley, Dallam, Hansford, Hutchinson, Moore, Ochiltree, Lipscomb and Hemphill. Schizaphis graminum (greenbug) found in first 6 counties named. Populations low, generally less than 1 per row foot. However, fields noted in Donley and Carson Counties with populations of 5 and 15 per planted row, respectively. Petrobia latens (brown wheat mite) general over entire area but populations low. (Daniels).

ENGLISH GRAIN APHID (Macrosiphum avenae) - OKLAHOMA - Averaged 20 per linear foot in wheat in Jackson County and 5 per linear foot in Grady County. (Okla. Coop. Sur.). NORTH CAROLINA - Noted in small grains in Wake County March 3; det. by C. F. Smith. Damaged small grains in county March 1. (Mount).

APPLE GRAIN APHID (Rhopalosiphum fitchii) - OKLAHOMA - Ranged 15-300 per linear foot in wheat in Tillman County; heaviest counts near Grandfield in 6-inch wheat. Light in Payne County. Averaged 600 per linear foot in field of rye and vetch in Johnston County. (Okla. Coop. Sur.).

CORN LEAF APHID (Rhopalosiphum maidis) - CALIFORNIA - Heavy on barley plantings in Imperial Beach, San Diego County. (Cal. Coop. Rpt.). OKLAHOMA - Averaged 16 per linear foot in oats in Grady County. (Okla. Coop. Sur.).

BROWN WHEAT MITE (Petrobia latens) - OKLAHOMA - Increasing in wheat in Tillman County. (Okla. Coop. Sur.). NEW MEXICO - Light to moderately heavy, spotted infestations on small grains in Curry County. Heavy, spotted infestations in several alfalfa fields suffering from drought in southern Eddy County. (N.M. Coop. Rpt.).

WINTER GRAIN MITE (Penthaleus major) - TEXAS - Considerable damage noted on oats locally in Delta County. (Turney). OKLAHOMA - Ranged up to 250 per linear foot in wheat in Grandfield area, Tillman County. Counts light in other areas of county. (Okla. Coop. Sur.).

SOUTHWESTERN CORN BORER (Zeadiatraea grandiosella) - OKLAHOMA - Dry cornstalks checked in Beckham County show 5 percent infested with live larvae. (Okla. Coop. Sur.). ALABAMA - Approximately 20 percent of larvae survived in cornfield in Morgan County; field infested in fall of 1964. No pupation noted. (McQueen).

SOUTHERN CORNSTALK BORER (Diatraea crambidoides) - ALABAMA - Approximately 20 percent of larvae survived in cornfield examined in Morgan County where 20-25 percent of stalks infested in 1964. No pupation noted. (Jarrett, Parker et al.).

EUROPEAN CORN BORER (Ostrinia nubilalis) - ILLINOIS - Surveys show 80 percent survival in northwest district and 64 percent survival in west district. (Ill. Ins. Sur.).

CUTWORMS - NEW MEXICO - Caused minor damage to wheat near Grady, Curry County; also damaged young alfalfa stands near Artesia, Eddy County. (N.M. Coop. Rpt.). MISSOURI - Active in alfalfa in southeastern district. (Jones).

WESTERN CORN ROOTWORM (Diabrotica virgifera) - IOWA - Spread continued eastward in State; reported in Worth, Mitchell, Howard, Cerro Gordo, Floyd, Chickasaw, Franklin, Bremer, Grundy, Black Hawk, Delaware, Benton, Jasper, Iowa, Cedar, Marion, Mahaska, Clarke, Lucas, Monroe, Wapello, Decatur, Wayne, Appanoose and Davis Counties for the first time in 1964. Only 20 of 99 counties not presently infested. (Iowa. Ins. Inf.).

SPIDER MITES - TEXAS - Counts of unspecified species down in Denton County wheat; ranged 150-250 per foot of drill row. Damage significant and warrants controls. (Turney).

A LEAFHOPPER (Cuerna costalis) - COLORADO - Noticeably abundant in lawn in Adams County. (Hantsbarger).

AN ANT (Lasius niger) - COLORADO - First activity observed March 16 in lawns at Fort Collins, Larimer County. (Thatcher).

A MILLIPED (Pleuroloma cala) - FLORIDA - Immatures moderate on centipede grass at Tallahassee, Leon County. (Miller, Feb. 26).

PEA APHID (Acyrthosiphon pisum) - WASHINGTON - Second instar overwintering summer forms scarce (2 per 12-25 sweeps) in seed and forage alfalfa 4 inches high in Walla Walla, Walla Walla County. None found in Mabton, Yakima County, and Pasco, Benton County. (Halfhill). ARIZONA - Extremely heavy in some alfalfa fields in Maricopa and Pinal Counties; moderate in Yuma County. (Ariz. Coop. Sur.). NEW MEXICO - Severely damaging alfalfa in Lea, Chaves and Eddy Counties. Killing seedling stands of alfalfa near Lovington, Lea County, and Carlsbad, Eddy County. Infestations heaviest found in these counties during past 5 years. Cool weather and winds hampering control. Populations remain extremely light on alfalfa in Mesilla Valley. (N.M. Coop. Rpt.). OKLAHOMA - Averaged 50 per linear foot in field of rye and vetch in Johnston County. (Okla. Coop. Sur.). ARKANSAS - Slight buildup observed in alfalfa in Conway County; numbers rather low, 10-12 per square foot. (Ark. Ins. Sur.). MISSOURI - Low numbers present on alfalfa in southeast. (Jones).

SPOTTED ALFALFA APHID (Therioaphis maculata) - NEW MEXICO - Severely damaged alfalfa in Lea, Chaves and Eddy Counties. Killing seedling stands of alfalfa near Lovington, Lea County, and Carlsbad, Eddy County. (N.M. Coop. Rpt.). COLORADO - Observed overwintering in Baca and Bent Counties on alfalfa. Total of 35 collected at Walsh, Baca County, December 24; averaged 11.7 per crown; averaged 0.7 per crown at Las Animas, Bent County, December 26. Total of 32 collected at Walsh February 27; averaged 10.7 per crown. (Schweissing).

COWPEA APHID (Aphis craccivora) - CALIFORNIA - Medium on alfalfa in Mendota, Fresno County. (Cal. Coop. Rpt.).

ALFALFA WEEVIL (Hypera postica) - MARYLAND - Adults active; averaged 9 per square foot in alfalfa in Howard County. (U. Md., Ent. Dept.). ALABAMA - Young larvae light; feeding on 7-acre new stand of alfalfa in Cherokee County. Isolated plants and clumps of plants severely affected. (McQueen). ARKANSAS - Eggs and all instars present in alfalfa in Mississippi County. (Ark. Ins. Sur.). MISSOURI - Larvae present in Pemiscot County. (Jones). COLORADO - Appearing in alfalfa as temperatures increase in Mesa County. (Bulla). UTAH - Adults active in alfalfa on warm days in Weber and Davis Counties. (Knowlton).

CLOVER LEAF WEEVIL (Hypera punctata) - MISSOURI - Larvae present in southeastern district. (Jones).

SWEETCLOVER WEEVIL (Sitona cylindricollis) - WASHINGTON - Adults notching roadside sweetclover near Wawawai, Whitman County, March 13. (Telford).

ALFALFA LOOPER (Autographa californica) - ARIZONA - Appearing in alfalfa in Yuma Valley, Yuma County. (Ariz. Coop. Sur.). NEVADA - Adults active in Mason and Smith Valleys, Lyon County. (Hilbig, Rivers).

ALFALFA CATERPILLAR (Colias eurytheme) - ALABAMA - Adults numerous in Morgan and Cherokee Counties. Egg laying underway on alfalfa in Cherokee County. (McQueen).

THRIPS - NEW MEXICO - Very light in Dona Ana County alfalfa. (N.M. Coop. Sur.). ARIZONA - Frankliniella spp. light to moderate in alfalfa in Yuma, Maricopa and Pinal Counties. (Ariz. Coop. Sur.).

LYGUS BUGS (Lygus spp.) - COLORADO - Adults appearing in alfalfa as temperatures increase in Mesa County. (Bulla).

CLOVER LEAFHOPPER (Aceratagallia sanguinolenta) - UTAH - Numerous in alfalfa and along roadside at Hyde Park, Cache County. (Knowlton, Mar. 15).

STRAWBERRY SPIDER MITE (Tetranychus atlanticus) - ARIZONA - Caused moderate damage in old, established alfalfa in areas of Yuma County. (Ariz. Coop. Sur.).

FRUIT INSECTS

CODLING MOTH (Carpocapsa pomonella) - WASHINGTON - Pupae recovered March 17 on banded trunks of apple and pear in abandoned orchard at White Swan, Yakima County. (Hathaway).

WESTERN TENT CATERPILLAR (Malacosoma pluviale) - OREGON - Egg masses began hatching March 13 in Willamette Valley. Tent webbing being formed around emerging leaves of apple trees. (Larson).

GREEN PEACH APHID (Myzus persicae) - COLORADO - Increasing numbers of stem mothers noted on peaches in Mesa County. (Bulla).

COWPEA APHID (Aphis craccivora) - ARIZONA - Scattered, light on oranges in Yuma Mesa area of Yuma County. (Ariz. Coop. Sur.).

CITRUS THRIPS (Scirtothrips citri) - ARIZONA - Populations increasing on new citrus growth in Yuma and Maricopa Counties. (Ariz. Coop. Sur.).

CITRUS BLACKFLY (Aleurocanthus woglumi) - MEXICO - Chemical Control Zone - Total of 1,827 trees on 494 properties in Baja California and 2,988 trees on 367 properties in Sonora inspected; all negative. Inspection of 107,432 citrus trees on 2,394 properties in 6 municipios of Nuevo Leon and 4 municipios of Tamaulipas revealed 6 leaves on 6 trees on 2 properties infested. (PPC Mex. Reg., Feb. Rpt.).

MEXICAN FRUIT FLY (Anastrepha ludens) - MEXICO - Total of 5,515 inspections of 1,440 traps on 636 properties negative except for one nongravid native female (first of season) at Ensenada, Baja California. (PPC Mex. Reg., Feb. Rpt.).

WESTERN SUBTERRANEAN TERMITE (Reticulitermes hesperus) - CALIFORNIA - Medium and damaging rooting grape cuttings in Fresno, Fresno County. (Cal. Coop. Rpt.).

TRUCK CROP INSECTS

CABBAGE APHID (Brevicoryne brassicae) - GEORGIA - Moderate to heavy on commercial cabbage in southern area. (Johnson).

IMPORTED CABBAGEWORM (Pieris rapae) - ALABAMA - Adults active and laying eggs throughout northern area. (McQueen).

Potato Psyllid Survey, Spring Breeding Areas of Arizona and California - 1965

The 1965 potato psyllid (Paratrioza cockerelli) survey was conducted March 15-18 in the overwintering areas of Arizona and California. Frequent rains during the winter and spring months over much of the area provided excellent growth of wild Lycium, the preferred host plant in the breeding area. The survey indicated a potentially moderate migration this season.

Potato Psyllid Survey on Overwintering Host
Average No. per 100 Sweeps

State	District	1965	1964	1963	1962	1961	1960	1959	1958
Arizona	Phoenix-Tucson	508	158	715	2236	149	665	992	93
California	Blythe-Barstow	87	100	185	909	41	282	237	96

In addition to potato psyllid adults, nymphs of this species were moderate to heavy in number in central Arizona. (PPC, West. Reg.).

POTATO PSYLLID (Paratrioza cockerelli) - ARIZONA - Populations beginning to increase on weed host plants in many parts of Maricopa County. (Ariz. Coop. Sur.)

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - TEXAS - Locally heavy and damaging turnips in Smith County. (Soape).

THRIPS - NEW MEXICO - Majority of onion fields checked averaged less than 1 per plant. Occasional field ranged 4-7 per plant. (N.M. Coop. Rpt.) .

SUGAR-BEET WIREWORM (Limonius californicus) - OREGON - Considerable numbers of larvae found in top 6 inches of soil in corn fields near Hermiston, Umatilla County. Upward movement much earlier than usual. (Crowell).

ONION BULB FLY (Eumerus strigatus) - CALIFORNIA - Larvae medium on roots of sugar beets in Crows Landing, Stanislaus County. This is a new host record for California Department of Agriculture. (Cal. Coop. Rpt.).

GREEN PEACH APHID (Myzus persicae) - ARIZONA - Moderate to heavy on lettuce in Yuma County, and sugar beets and lettuce in Maricopa County. (Ariz. Coop. Sur.).

A CELERY APHID (Aphis heraclella) - MICHIGAN - Found infesting commercial celery at Hamilton, Allegan County, August 26, 1964. Det by L. M. Russell. (Wells). This is a new State record. (ARS).

A FALSE CELERY LEAF TIER (Udea profundalis) - CALIFORNIA - Light on sugar beets in Kerman, Fresno County; appearance about 2 weeks early due to mild winter. Possibilities of heavy summer buildup indicated; occurred also on sugar beets in Dos Palos area. (Cal. Coop. Rpt.).

TOBACCO INSECTS

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - GEORGIA - Light to moderat on tobacco in plant beds in southern area. (Johnson).

TOBACCO FLEA BEETLE (Epitrix hirtipennis) - GEORGIA - Light to moderate in tobacc plant beds in southern area. (Johnson).

GREEN PEACH APHID (Myzus persicae) - GEORGIA - Very light on tobacco in the plant beds in southern area. (Johnson).

SLUGS AND SNAILS - SOUTH CAROLINA - Continue to damage tobacco leaves in the plant bed; controls good. (Nettles et al., Mar. 16).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

A JUNIPER TWIG MOTH (Periploca nigra) - CALIFORNIA - Light on Tam juniper in Lemon Grove, San Diego County. (Cal. Coop. Rpt.).

A PINE TIP MOTH - ARKANSAS - Overwintered in good numbers. Weather conditions have not favored adult emergence. (Ark. For. Pest Rpt., March).

DOUGLAS-FIR BEETLE (Dendroctonus pseudotsugae) - OREGON - Spring flights noted in southern part of State March 1-5; this probably earliest beetle has flown for past decade in this area. Attacks are likely to cause considerable tree mortality in Douglas-fir stands in western part of State this year. (R.E. Dolph, USFS).

BARK BEETLES - ARKANSAS - Ips spp. and Dendroctonus terebrans (black turpentine beetle) active during warm weather in midwinter. Buildup can be expected as temperatures rise. Salvage of damaged timber recommended as most practical control method. No D. frontalis (southern pine beetle) infestations found. Chance of spread into State appears remote. (Ark. For. Pest Rpt., March). TEXAS - Ips avulsus, I. grandicollis and I. calligraphus attacking and killing 10-15 acres of loblolly and shortleaf pines in eastern Wood County; damage constant on lower two-fifths of stem. No contributing factors evident; no control reported. (Texas For. Pest Comm., Feb. Rpt.; Williamson).

WEEVILS - ARKANSAS - Hylobius pales (pales weevil) and Pissodes nemorensis (deodar weevil) adults active all winter except during very cold weather. Numbers will increase in recently cut-over areas as weather becomes warmer. (Ark. For. Pest Rpt., March).

PINE SPITTLEBUG (Aphorphora parallela) - MARYLAND - Eggs observed on cones and needles of loblolly pines at Princess Anne, Somerset County. (U. Md., Ent. Dept.).

A CONIFER SAWFLY (Neodiprion taedae linearis) - ARKANSAS - Egg deposits indicate northward spread during past fall. Serious infestations indicated in local areas of south central section. Hatching of eggs expected following few days of warm weather. (Ark. For. Pest Rpt., March).

BAGWORM (Thyridopteryx ephemeraeformis) - ALABAMA - Overwintering egg masses in old bags numerous on many redcedars, arborvitae and other trees throughout northern area. Egg cases examined showed no hatch. (McQueen).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - ALABAMA - Egg masses numerous on wild cherries in Morgan and Cherokee Counties; no hatching observed. (McQueen).

SPRING CANKERWORM (Paleacrita vernata) - IOWA - Males observed around lights at Ames, Story County, on February 28. (Iowa Ins. Inf., March 15).

BROWN-TAIL MOTH (Nygmia phaeorrhoea) - MASSACHUSETTS - Survey disclosed heavy infestation in Provincetown-Truro area, Barnstable County. NEW HAMPSHIRE - Approximately 25-50 winter webs found at Francestown, Hillsboro County; State has 5 infested sites. (PPC East. Region, Feb. Rpt.).

GYPSY MOTH (Porthetria dispar) - NEW JERSEY - Surveys revealed 6 additional small infestations in Bergen, Morris, Passaic and Somerset Counties. NEW YORK - No new infestations found in Jefferson County. (PPC East. Reg., Feb. Rpt.).

TEXAS LEAF-CUTTING ANT (Atta texana) - TEXAS - Attacked seedling trees in Rusk County; 3 days following planting, seedlings were being destroyed. (Texas For. Pest Comm., Feb. Rept.; Williamson).

A CRYPTOPHAGID MOTH (Pharaxonotha zamiae) - FLORIDA - Adults severe on fruit of coontie at Gotha, Orange County. (Griffith, Kipp, March 4).

GOLDEN TORTOISE BEETLE (Metriona bicolor) - CALIFORNIA - Heavy on sour dock in Gardena, Los Angeles County. (Cal. Coop. Rpt.).

APHIDS - ALABAMA - Tremendous buildup of Aphis spiraecola (spirea aphid) noted; ranged 10-20 per terminal on Spirea vanhouttei and S. thunbergii. Adalia bipunctata (two-spotted lady beetle) becoming numerous. (McQueen). TEXAS - Unspecified species appearing on arborvitae in Denton County. (Turney). OKLAHOMA - Cinara thujafilina heavy on arborvitae in Marshal County; large amounts of honeydew present on most plants. (Okla. Coop. Sur.). CALIFORNIA - Amphorophora sonchi adults medium on dandelions in San Bernardino, San Bernardino County. (Cal. Coop. Rpt.). OREGON - Schizolachnus pineti heavy on Mugho and Scotch pines in Multnoma County early in month. (Larson).

COCCIDS - MARYLAND - Unaspis euonymi (eyonymus scale) moderate on eyonymus at Glendale, Prince Georges County. (U. Md., Ent. Dept.). NORTH CAROLINA - Chrysomphalus tenebricosus (gloomy scale) heavy on silver maple in Wake County. Fiorinia theae heavy on camellia in Lee County. (Mount). FLORIDA - Ceroplastes cirripediformis (barnacle scale) adults light on leaves of bird-of-Paradise at Salerno, Martin County. (Campbell, March 3). Protopulvinaria pyriformis (pyriform scale) on leaves of goldenrod (Solidago tenuifolia) at Hialeah, Dade County. (Stegmaier, March 6). Saissetia hemisphaerica (hemispherical scale) adults light on leaves of bird-of-Paradise at Salerno (Campbell, March 3); and all stages moderate on stem of cenizo (Leucophyllum frutescens) in nursery at Miami, Dade County. (Herrmann, March 5). Aspidiotus lataniae light on stem of puncture-vine at Miami (Stegmaier, Feb. 16); and all stages moderate on stem of cenizo in nursery at Miami; Howardia biclavis (mining scale) moderate on stem of cenizo in nursery at Miami (Herrmann, March 5). Pseudaulacaspis pentagona (white peach scale) light to moderate on Zamia sp. in nursery at Leesburg, Lake County. (Bentley, Feb. 19). These are new host records for Florida Division of Plant Industry. (Fla. Coop. Sur.). Fiorinia theae (tea scale) severe on Burford holly in garden center at Tampa, Hillsborough County, (Hale), and moderate to severe on leaves of Camellia sasanqua at Cocoa, Brevard County, (Levan). Conchaspis argraeci severe on stem of croton in nursery at Miami. (Herrmann, March 5). Pseudococcus adonidum (long-tailed mealybug) adults moderate on Hoya sp. in nursery at Apopka, Orange County. (Musgrove, March 4). ALABAMA - Undetermined scale insect unusually heavy; killing and damaging small water oaks near Weiss Dam Lake, Cherokee County. Lady beetles actively feeding. (McQueen). TEXAS - U. euonymi becoming active in Denton County. (Turney). COLORADO - Phenacaspis pinifoliae (pine needle scale) heavy and causing needle drop in Larimer, Boulder and Denver Counties. (Thatcher, Daniels, Hantsbarger). CALIFORNIA - Paralatoria oleae (olive scale) light on mahonia nursery stock in Modesto, Stanislaus County. Rhizoecus pritchardi medium in African-violets locally in Wasco, Kern County. Protopulvinaria pyriformis locally medium on gardenia plants in San Diego, San Diego County. P. pyriformis is a new county record; only other known infestation in State is in Pacific Palisades area, Los Angeles County. (Cal. Coop. Rpt.).

HOLLY LEAF MINER (Phytomyza ilicis) - OREGON - Pupation about 75 percent complete in holly in Multnomah and Lane Counties. (Goeden).

RED-BANDED THRIPS (Selenothrips rubrocinctus) - FLORIDA - Adults general on leaves of dwarf myrtle in nursery at Miami, Dade County. (Herrmann, March 8).

A SUBTERRANEAN TERMITE (Reticulitermes sp.) - FLORIDA - Adults and nymphs severe on roots of and soil around philodendrons and on bark of totem poles for these plants in nursery at Zellwood, Orange County. (Musgoove, March 9).

SPIDER MITES - FLORIDA - Tetranychus sp. adults severe on leaves of Schefflera actinophylla in nursery at Plymouth, Orange County. (Musgrove, March 5). SOUTH CAROLINA - Unspecified species causing various degrees of damage in many areas. (Nettles et al., March 16). NORTH CAROLINA - Tetranychus sp. eggs numerous on Japanese holly in Martin County. (Mount). CALIFORNIA - Eotetranychus malvastris and Hystrichonychus sidae medium on Sphaeralcea sp. in Winterhaven, Imperial County. (Cal. Coop. Rpt.).

ERIOPHYID MITES - CALIFORNIA - *Aculus ligustri* medium on privet in San Mateo, San Mateo County. *Aceria* sp. medium on *Sphaeralcea* sp. in Winterhaven, Imperial County. (Cal. Coop. Rpt.).

INSECTS AFFECTING MAN AND ANIMALS

STATUS OF THE SCREW-WORM (*Cochliomyia hominivorax*) IN THE SOUTHWEST

No screw-worm cases were reported during the period March 14-20 in the Southwestern Eradication Area. Total of this year's cases in the area remains slightly above the 1964 figure. The Republic of Mexico reported 32 in Sonora, 2 in Chihuahua, 1 in Coahuila, 1 in Veracruz, 2 in San Luis Potosi and 2 in Tamaulipas. A report which was delayed reported an additional 21 cases in Sonora, 1 in Nuevo Leon, 1 in San Luis Potosi and 1 in Tamaulipas. The computations below reflect the total of these reports. Sterile screw-worm flies released: Texas 382,250 and Mexico 83,886,000.

	Positive Cases		Negative Cases		Ratio of Positive Cases to 100 Cases Negative	
Year	Current	Cumulative	Current	Cumulative	Current	Cumulative
	Table 1.	Comparison of specimens reported during corresponding weeks in 1963 and 1964 in Southwestern Eradication Area.				
1963	10	169	91	334	10.98	50.59
1964	2	3	129	497	1.55	0.60
1965	0	4	65	533	0.00	0.75
	Table 2.	Comparison of specimens reported during corresponding weeks and in a corresponding area in 1964 in the United States-Mexico Barrier Zone.*				
1964	15	145	23	161	65.21	90.06
1965	60	472	35	302	171.42	156.29
	Table 2A.	Mexican portion of Barrier Zone only.				
1964	15	140	5	49	300.00	285.71
1965	60	470	22	185	272.72	254.05

* Barrier Zone - Area in which screw-worm eradication operations are being carried out in an effort to prevent establishment of self-sustaining screw-worm population in the United States.

(Anim. Dis. Erad. Div.).

SHEEP KED (*Melophagus ovinus*) - MICHIGAN - Adults numerous on flock of ewes in Ingham County. (Dowdy).

SHEEP BOT FLY (*Oestrus ovis*) - INDIANA - Maggot dropped from western yearling ewe at Lafayette, Tippecanoe County. (Chandler).

MOSQUITOES - SOUTH DAKOTA - May be more of a problem than last year in Brookings County due to above average surface water accumulation. (S.D. Ins. Newsltr., March 12). TEXAS - Very local concentrations reported throughout Jefferson County during February. Very few mosquitoes noted due to few warm afternoons. Species noted: *Culex salinarius*, *Culiseta inornata* and *Culex pipiens quinquefasciatus* (southern house mosquito). (Jefferson Co. Mosq. Contr. Dist., Feb. Rpt.; Thompson).

CATTLE LICE - UTAH - Several beef herds dipped in Carbon County. (Knowlton, Olson, March 15). Very troublesome in 6 beef herds in Davis County. Controls applied to 7,150 cattle in Emery County and 22,000 cattle in Sevier County since last fall; extensive spring control underway. (Rogers, Olson, Rickenbach, Knowlton).

TICKS - CALIFORNIA - *Dermacentor occidentalis* (Pacific Coast tick) light on brush in Poway, San Diego County, and in Fairplay, El Dorado County. Local occurrence of tick paralysis more common than in past years. Movement of livestock probable reason for occurrence of ticks in new areas. Deer have been affected in some instances. Light numbers of *Rhipicephalus sanguineus* (brown dog tick) noted on dog in Fresno, Fresno County. This tick not as prevalent since advent of cooler weather. (Cal. Coop. Rpt.). OKLAHOMA - *Ixodes scapularis* (black-legged tick) nymphs taken on human in Payne County. (Okla. Coop. Sur.). DELAWARE - *R. sanguineus* heavy in home in New Castle County. (Burbutis).

TROPICAL RAT MITE (*Ornithonyssus bacoti*) - CALIFORNIA - Light numbers noted in residence in Sacramento, Sacramento County. (Cal. Coop. Rpt.).

HOUSEHOLD AND STRUCTURAL INSECTS

SAW-TOOTHED GRAIN BEETLE (*Oryzaephilus surinamensis*) - OKLAHOMA - Found in home in Stillwater, Payne County. (Okla. Coop. Sur.). UTAH - Infested flour and other foods in home at Smithfield, Cache County. (Knowlton, March 15). DELAWARE - Several infestations noted in dried cereal products in homes in New Castle County. (Burbutis). INDIANA - This species and *Tribolium confusum* (confused flour beetle) infested stored products in home in Camden, Carroll County. (Sanders).

CARPET BEETLES - INDIANA - *Anthrenus verbasci* (varied carpet beetle) larvae infested pharmacy in Goodland, Newton County. (Sanders). IOWA - *Anthrenus flavipes* (furniture carpet beetle) and *Attagenus piceus* (black carpet beetle) adults noted in home in Des Moines, Polk County. (Iowa Ins. Inf., March 15).

CIGARETTE BEETLE (*Lasioderma serricorne*) - MICHIGAN - Specimens, probably this species, infested cereal in Gogebic County home. (Bednar).

INDIAN-MEAL MOTH (*Plodia interpunctella*) - DELAWARE - Adults numerous in home in New Castle County. (MacCreary).

A STINK BUG (*Brochymena* sp.) - OKLAHOMA - Active and becoming a pest in Stillwater area, Payne County. (Okla. Coop. Sur.).

BOXELDER BUG (*Leptocoris trivittatus*) - MARYLAND - Infested property in Baltimore. (U. Md., Ent. Dept.).

A HACKBERRY PSYLLID (*Pachypsylla* sp.) - OKLAHOMA - Active and becoming nuisance in and around homes in Stillwater, Payne County. (Okla. Coop. Sur.).

COCKROACHES - UTAH - Infesting home at Midvale, Salt Lake County; *Blatta orientalis* (oriental cockroach) in many homes in Bountiful-Centerville area of Davis County. (Knowlton). Coakroaches infesting many homes in Brigham City area, Box Elder County; *Supella supellectilium* (brown-banded cockroach) present in many instances. (Knowlton). MARYLAND - *Blatta orientalis* (oriental cockroach) heavy in several rooms of school at Suitland, Prince Georges County. (U. Md., Ent. Dept.). INDIANA - *Supella supellectilium* (brown-banded cockroach) and *Blatta orientalis* (oriental cockroach) infesting home in Logansport, Cass County. (Myers).

CLOVER MITE (*Bryobia praetiosa*) - MARYLAND - Migrating into several homes in Prince Georges County. (U. Md., Ent. Dept.). NEVADA - Continuing to enter homes in large numbers in southern Washoe County. (Coop. Rpt.). SOUTH CAROLINA - Found over large section of new development near Columbia; caused considerable concern in homes. (Nettles et al., March 16). UTAH - Very numerous; invading number of classrooms in high school at Midvale, Salt Lake County, and home in Orem, Utah County. Invading many homes in Salt Lake City and elsewhere in Salt Lake County, and in Farmington-Layton area, Davis County. (Knowlton).

SUBTERRANEAN TERMITES (Reticulitermes spp.) - MARYLAND - Swarmed in and around homes in Caroline and Prince Georges Counties. (U. Md., Ent. Dept.). NORTH CAROLINA - R. flavipes (eastern subterranean termite) noted in Jones County. (Franck, Jones).

LARGER YELLOW ANT (Acnathomyops interjectus) - NORTH CAROLINA - Swarmed in home in Wake County March 19. (Mount).

CARPENTER ANTS - SOUTH CAROLINA - Unspecified species caused considerable damage to home in Aiken County. (Nettles et al., March 16). INDIANA - Camponotus spp. infesting home in Elkhart, Elkhart County. (Myers).

STORED-PRODUCT INSECTS

POTATO TUBERWORM (Gnorimoschema operculellum) - IOWA - Found in potato chip factory in Des Moines, Polk County, during February. Controlled by fumigation. This is the first time this pest has been found in State for several years. (Iowa Ins. Inf.).

INDIAN-MEAL MOTH (Plodia interpunctella) - MINNESOTA - Infested government surplus red kidney beans in Washington County. (Minn. Ins. Rpt.).

BENEFICIAL INSECTS

LADY BEETLES - NEW MEXICO - Adults and larvae, mostly Hippodamia convergens (convergent lady beetle), very abundant in alfalfa heavily infested with Acyrthosiphon pisum (pea aphid) and Therioaphis maculata (spotted alfalfa aphid) in Lea and Eddy Counties. (N.M. Coop. Rpt.). ALABAMA - Two species actively feeding on undetermined scale insect in Cherokee County; Chilocorus stigma (twice-stabbed lady beetle) was more numerous. (McQueen).

HONEY BEE (Apis mellifera) - SOUTH DAKOTA - Winter mortality may be 10-12 percent, slightly higher than normal, in Brookings area, Brookings County. (S.D. Ins. Newsltr., March 12).

MISCELLANEOUS INSECTS

A SCARAB (Anomala ausonia Er.) - NEW JERSEY - Adult captured in flight near ailanthus trees in weedy dump area within one mile of Hudson River at Jersey City, Hudson County. Collection made by C. B. Sanders on July 8, 1964. Determined by O. L. Cartwright. This is a new United States record. This scarab is known to occur in Germany, Italy and Sicily. One blacklight and one chemical trap were set in immediate area of capture and grub diggings were begun and continued for one week; no further adults and no grubs were obtained. Blacklight and chemical traps will be set in area from May to September 1965 in an attempt to determine the status of beetle in the area of Jersey City. (N.J. Dept. Agr.). Investigations conducted near Naples, Italy, during the period 1941-1949, showed that A. ausonia var. neapolitana Rttr. adults attacked leaves of many trees and plants and caused serious injury to grapevines, on which the tendrils and young fruits were also damaged. Adults emerged at end of May and lived about 40 days, feeding 8-12 days before pairing. About 2 days after mating, females entered soil to oviposit, laying up to 100 eggs in 2-8 days. Eggs hatched in about 15 days, larvae feeding on decaying organic matter in the soil. At approach of winter, when temperatures dropped below 50°F. larvae moved to greater depths and ceased activity. Feeding was resumed in late March and pupation occurred at end of May; prepupal and pupal stages lasted 2 and 8 days, respectively. (PPC).

A SCARAB (Diplotaxis rufa) - FLORIDA - Adults taken on window at Orlando, Orange County. (Boyner, March 4). This is a rare species which feeds only on turkey oak in the Orlando-Eustis area. (Fla. Coop. Sur.).

A FUNGUS GNAT (Leia varia) - CALIFORNIA - Heavy population a nuisance in yard at Goleta, Santa Barbara County. (Cal. Coop. Rpt.).

COTTON INSECTS

PINK BOLLWORM (Pectinophora gossypiella) - FLORIDA - Larvae and pupae taken on wild cotton March 10-12 at Cape Sable and Lower Matecumbe Key, Monroe County, and at Fort Myers, Lee County. (Fla. Coop. Sur.).

LIGHT TRAP COLLECTIONS

	Tempera-ture °F.	Precip-itation (inches)	Type of trap *	*Agrotis ipsilon* (black cutworm)	*Carpocapsa pomonella* (codling moth)	*Chorizagrotis auxiliaris* (army cutworm)	*Estigmene acrea* (salt-marsh caterpillar)	*Faronta diffusa* (wheat head armyworm)	*Feltia subterranea* (granulate cutworm)	*Heliothis virescens* (tobacco budworm)	*H. zea* (bollworm, corn earworm, tomato fruitworm)	*Loxostege commixtalis* (alfalfa webworm)	*Loxostege similalis* (garden webworm)	*Loxostege sticticalis* (beet webworm)	*Ostrinia nubilalis* (European corn borer)	*Peridroma saucia* (variegated cutworm)	*Prodenia ornithogalli* (yellow-striped armyworm)	*Protoparce quinquemaculata* (tomato hornworm)	*Protoparce sexta* (tomato hornworm)	*Pseudaletia unipuncta* (armyworm)	*Spodoptera exigua* (beet armyworm)	*Spodoptera frugiperda* (fall armyworm)	*Trichoplusia ni* (cabbage looper)	Crops **
FLORIDA																								
Gainesville 3/10			BL						2															
GEORGIA																								
Tifton 3/4-10	30-66	0.25	BL							0	0							0	0					
SOUTH CAROLINA																								
Charleston 3/15-21	35-77	1.46	BL	3			0		3	0	0					0	0	0	0	2		0	0	
TEXAS																								
Brownsville 3/9-17	59-84	0.08	5 BL	249			7		1321	1	248		208			160	74	2	2	744		214	29	
Waco 3/13-19			BL	4					44		3					54	36			60				

* BL = blacklight; I = incandescent; MV = mercury vapor; O = other

** alf. = alfalfa; beet = garden beet and/or sugar beet; cole = cole crops (crucifers); cott. = cotton; FC = field corn; grain = small grains; leg. = legumes (unspecified); lett. = lettuce; pean. = peanut; pepp. = pepper; pot. = potatoes; SC = sweet corn; sol. = solanaceous plants (unspecified); soy. = soybean; TC = truck crops (unspecified or mixed); tob. = tobacco; tom. = tomato.

ESTIMATED LOSSES AND PRODUCTION COSTS ATTRIBUTED TO INSECTS AND RELATED ARTHROPODS

IN Illinois (State or District) DURING 1964 (Year)

ATTACKING Clover & alfalfa hay (Commodity or Crop)

A. Pest or pest complex: Grasshoppers

B. Number of acres[a] produced (From CRS)[d] No. 1,765,000
C. Average yield per acre[a] (From CRS) Units/ 1.07 tons
D. Price[b] per unit (ton)[c] (From CRS) $/ 23.00
E. Acres[a] needing control No. 39,272
F. Acres[a] treated No. 34,272
G. Reduction due to not treating where needed:
  H. Loss in yield, percent % 15
  I. Loss in yield, units per acre[a], C x H Units/ 0.16 ton
  J. Loss in yield, $ per acre[a], D x I $/ 3.68
  K. Loss in quality, $ per ----[a] $/ ----
L. Yield loss for all acres[a], (E-F) x I Units 800 tons
M. Control cost, $ per acre[a], $/ 3.25
N. Control cost for all acres[a], F x M $ 111,384
O. Yield loss for all acres[a], (E-F) x J $ 18,400
P. Quality loss for all ----[a], (E-F) x K $ ----
Q. Combined control cost and losses, N + O + P $ 129,784
R. Percent loss due to each insect in the complex:

Comment: This is $4,769,786 less than the estimated damage in 1963 and is due directly to a large decrease in the grasshopper population.

a. Acres, head of cattle or other producing units used by Crop Reporting Service.
b. Season average price per unit as given by CRS (describe basis).
c. Bushels, boxes, tons or other marketing units used by CRS; show which in ( ).
d. Illinois Annual Crop Summary, Dec. 22, 1964.

Submitted by Clarence E. White
Date January 28, 1965

ATTACKING Hay crops (Commodity or Crop)

A. Pest or pest complex: Meadow spittlebug, pea aphid

B. Number of acres[a] produced (From CRS)[d] No. 1,906,000
C. Average yield per acre[a] (From CRS) Units/ 2.14 tons
D. Price[b] per unit (ton)[c] (From CRS) $/ 23.00
E. ----[a] needing control No. ----
F. Acres[a] treated No. 35,043
G. Reduction due to not treating where needed:
  H. Loss in yield, percent % ----
  I. Loss in yield, units per ----[a], C x H Units/ ----
  J. Loss in yield, $ per ----[a], D x I $/ ----
  K. Loss in quality, $ per ----[a] $/ ----
L. Yield loss for all ----[a], (E-F) x I Units ----
M. Control cost, $ per acre[a], $/ 3.25
N. Control cost for all acres[a], F x M $ 113,890
O. Yield loss for all ----[a], (E-F) x J $ ----
P. Quality loss for all ----[a], (E-F) x K $ ----
Q. Combined control cost and losses, N + O + P $ 113,890
R. Percent loss due to each insect in the complex: Meadow spittlebug 56.88 and pea aphid 43.12

Comment:

a. Acres, head of cattle or other producing units used by Crop Reporting Service.
b. Season average price per unit as given by CRS (describe basis).
c. Bushels, boxes, tons or other marketing units used by CRS; show which in ( ).
d. Illinois Annual Crop Summary, Dec. 22, 1964.

Submitted by Clarence E. White
Date January 28, 1965

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1964

(continued from page 236)

TRUCK CROP INSECTS

EGGPLANT, PEPPER, POTATO AND TOMATO INSECTS

Highlights:

Various NOCTUID MOTHS were troublesome on solanaceous crops in the Nation and controls, while generally satisfactory, occasionally gave poor results. TOMATO FRUITWORM was the most serious pest of tomatoes in Alabama; it was important in tomato production in Arkansas and Utah also. ARMYWORMS were the most destructive pests of tomatoes in Colorado. CABBAGE LOOPER and other noctuids were unusually abundant in Wisconsin and apparently difficult to control on potatoes. Rather high light-trap collections of TOMATO HORNWORM adults in the Great Lakes States were reflected by high larval feeding on tomatoes later. COLORADO POTATO BEETLE was particularly destructive in the East where weather was more favorable for overwintering adults and later broods. A third brood occurred on the Eastern Shore of Virginia. FLEA BEETLES were troublesome on unprotected crops throughout the Nation. Various APHIDS were particularly troublesome on all solanaceous crops with numbers remaining high unless controlled by insecticides or hot weather. POTATO LEAFHOPPER was the most important insect of vegetable crops in Ohio where it caused serious damage to potatoes, peppers and eggplants. This leafhopper was a definite problem on the Eastern Shore of Maryland also. BEET LEAFHOPPER caused serious losses of tomatoes in Utah but in Colorado this pest was generally kept low on tomatoes by the controls used in sugar beet fields. Large numbers of POTATO PSYLLID were found locally in Wyoming and Colorado but were generally well controlled. Psyllid yellows was found on tomatoes in Wyoming and on tomatoes and potatoes in western Nebraska. SPRINGTAILS were destructive to seedling peppers in New Mexico and seedling tomato plants in California.

TOMATO FRUITWORM (Heliothis zea) caused light to moderate damage to tomato fruits in several areas of GEORGIA. This noctuid moth was the most serious pest of tomatoes in 1964 in ALABAMA. Few tomato fruitworm larvae were found on peppers in the Gainesville area of FLORIDA; present as usual on tomatoes in the Homestead area and about normal in the Fort Pierce area. It caused normal damage to tomatoes throughout LOUISIANA with the heaviest populations occurring in the southern half of the State. Tomato fruitworm was a problem in practically all commercial tomato fields in ARKANSAS and required treatments. All specimens collected from tomato in Arkansas were determined as tomato fruitworm. Despite the general increase in population levels in INDIANA, infestations remained light on tomatoes in the commercial areas. Tomato fruitworm caused very light damage in the Arkansas Valley of COLORADO but it was numerous enough in the western sections of Colorado to require controls. Populations were high on tomatoes grown for canning in UTAH. Other years of high populations in northern Utah were 1941 and 1952; egg surveys on tomato leaves predicted the impending outbreak of 12-15 percent infestations in tomato fruits. Tomato fruitworm was present statewide on tomatoes in CALIFORNIA and infestations continued all year.

CABBAGE LOOPER (Trichoplusia ni) was destructive to foliage of greenhouse tomatoes at Wooster, OHIO, in late September. Cabbage looper and related species were unusually abundant and apparently difficult to control in WISCONSIN; potatoes were damaged in the northeast and central parts of the State. Cabbage looper damaged potatoes in Brazos County, TEXAS, and tomatoes in several greenhouses. Several commercial tomato fields were moderately damaged on the Eastern Shore of MARYLAND. Cabbage looper was present as usual on tomatoes at Homestead, FLORIDA.

CUTWORMS in potato tubers in the Hastings area of FLORIDA were very low due to increased spraying at the end of the season. Cutworms, mainly GRANULATE CUTWORM (Feltia subterranea) and BLACK CUTWORM (Agrotis ipsilon), were locally damaging to untreated peppers at Gainesville, Alachua County, Florida. Cutworms are routinely considered a potential or actual problem on peppers in the Immokalee area. Cutworms were about average on tomatoes in the Fort Pierce area of Florida. Cutworms were present on potatoes and tomatoes in ALABAMA and light to moderate on pimento pepper plants in the middle section of GEORGIA. Moderate populations of a gray cutworm caused moderate damage to tomatoes in Cape Elizabeth, Cumberland County, MAINE. A similar cutworm was heavy and damaging peppers in Auburn, Androscoggin County, during the same period. VARIEGATED CUTWORM (Peridroma saucia) was reported as occasionally attacking the foliage of greenhouse tomatoes in OHIO during September. Variegated cutworm ranged 10-15 larvae per square foot in commercial potato plantings in Jasper County, INDIANA. Black cutworm caused extensive damage to potato tubers in the central section of WISCONSIN in mid-August; drought in the area attracted moths to irrigated fields. Unspecified cutworms damaged ripening tomatoes in contact with the soil in home gardens in Las Cruces area of Dona Ana County, NEW MEXICO. Numerous fields in the northern section of COLORADO had economic infestations of black cutworm larvae. Control measures prevented significant damage.

Unspecified ARMYWORMS were the most destructive tomato pests in the Loma-Fruita area of Mesa County, COLORADO; control efforts gave poor results. Loss in the main tomato-producing area of Colorado was as high as 15 percent. YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli) caused slight damage to greenhouse tomatoes at Wooster, OHIO, in early September. Few FALL ARMYWORM (Spodoptera frugiperda) were found on pepper fruits at Gainesville, FLORIDA, in May and June. SOUTHERN ARMYWORM (Prodenia eridania) was present as usual on tomatoes in the Homestead area and BEET ARMYWORM (Spodoptera exigua) was severe on tomatoes in the Bradenton area of Florida, southern armyworm was about average on tomatoes in the Fort Pierce area of Florida.

TOMATO HORNWORM (Protoparce quinquemaculata) adults began appearing in mid-June in WISCONSIN where counts were relatively high in blacklight traps. This was later reflected by larval feeding on tomato plants in late July. General emergence began in MICHIGAN in mid-July as indicated by blacklight trap collections. The usual incidence of high larval infestations on unsprayed tomatoes occurred in July and August in Michigan. Both tomato hornworm and TOBACCO HORNWORM (P. sexta) were more numerous in 1964 in INDIANA than in previous years. Preliminary evaluation of light trap collections suggests that populations in the southern half of Indiana were considerably higher than those in the northern half; however, economic damage remained at a low level throughout the State. Tomato hornworm was present in OKLAHOMA. It damaged tomatoes over a wide area of the Rio Grande Valley of TEXAS. Protoparce sp. was a problem on tomato plants in home gardens in the southern counties of NEW MEXICO. Chemical controls were required in commercial tomato fields near Columbus, Luna County.

Tomato hornworm was a general pest of tomatoes in a few northern CALIFORNIA counties. Damage to tomatoes by this hornworm was unusually severe in Iron County, UTAH. Very light damage occurred on tomatoes in the Arkansas River Valley of COLORADO but tomato hornworm was abundant enough to require at least one insecticide application in the western section of the State.

Tomato hornworm was reported heavy in the Westerly area of Washington County, RHODE ISLAND, in August. This species was a pest of tomatoes in ALABAMA.

POTATO TUBERWORM (Gnorimoschema operculellum) caused very light injury in the field in MICHIGAN. Because of low insect numbers and lush plant growth, larvae and adults went undetected in one or possibly more Monroe County fields until September 14. Positive identification of this gelechiid moth was made from 3 fields near Erie on that date. A sizeable number of adults was present in the field at the time recommendations for insecticidal treatments were made. Very few larvae and adults could be found near harvesttime in late September. The magnitude of the 1964 problem was greatly reduced from that of 1963 in Michigan. Potato tuberworm mined potato foliage on the Eastern Shore of VIRGINIA. There was almost no activity on potatoes in the Hastings area of FLORIDA. Varied populations occurred in potato-growing areas of CALIFORNIA. Another gelechiid moth, TOMATO PINWORM (Keiferia lycopersicella), was heavier in that State than it had been in many years. Tomato pinworm occurs in very few California counties.

EUROPEAN CORN BORER (Ostrinia nubilalis) heavily infested some untreated peppers in DELAWARE, particularly during September in Sussex County. Peak adult flights occurred in mid-May, late July and from mid-August through the first 2 weeks in September in Delaware. European corn borer was light on pimento peppers in the northern section of ALABAMA during the late season.

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) populations were about normal in ALABAMA. In GEORGIA, this leaf beetle was light to heavy on commercial tomato plants and heavy on commercial potatoes for fresh market in the southern section of the State. On the Eastern Shore of VIRGINIA and MARYLAND unusually cool weather appeared to favor this beetle which was a considerable problem. Three broods appeared in Virginia, which was rather unusual. Unprotected potatoes, tomatoes and eggplants were damaged extensively on the lower Eastern Shore of Maryland especially early in the season. High population levels were again noted in NEW JERSEY where it was more troublesome on tomatoes and eggplants than it was on potatoes. Colorado potato beetle was serious on potatoes on Long Island, NEW YORK, early in the season; it was light on tomatoes in some areas of the State. In MASSACHUSETTS, Colorado potato beetle was extremely abundant in Hampshire and Franklin Counties. Difficulty in control was experienced by some growers. A larger carryover is expected in Massachusetts. Heavy, overwintered populations attacked emerging crops in RHODE ISLAND in mid-May. Oviposition was noted in the Kingston area May 27 and adults of a new generation began appearing in mid-July. Late season populations were smaller than in 1963 in commercial plantings of Rhode Island. A single adult was taken in Monmouth, Kennebec County, MAINE, on potato foliage on June 25. Appreciable numbers were reported from southern areas of the State in late June. Colorado potato beetle was moderate to heavy in New Sharon, Franklin County, in late July.

Colorado potato beetle populations were heavy on potatoes in southwestern OHIO. Statewide injury resulting from larval feeding was generally lower in MICHIGAN in 1964 than it was in 1963. Although severe damage occurred on potatoes near Elgin, Grant County, NORTH DAKOTA, damage was generally noneconomic in other areas of the State. Small numbers of Colorado potato beetle were reported from southeastern MISSOURI during mid-May.

Colorado potato beetle was found in COLORADO but it caused only light losses in the northern sections. This pest was more numerous than usual in UTAH. Slightly larger numbers of adults and larvae were found infesting potatoes in southeastern WYOMING in 1964. Damage, however, was confined to sparse, localized areas within fields and very little control work was necessary. The first adults were recovered in Goshen County, Wyoming, in mid-June; adults and larvae averaged 12 per hill in infested areas. Adults were emerging from the soil in WASHINGTON by late April and dying for lack of black nightshade, the spring host. Egg masses were abundant on potatoes and nightshades in south central Washington by early June.

FLEA BEETLES were moderate to heavy on commercial tomato and eggplant fields in southern GEORGIA. Unspecified flea beetles were pests of tomatoes and potatoes in ALABAMA. POTATO FLEA BEETLE (Epitrix cucumeris) caused extensive damage to potato tubers which was responsible for loss of grade and rejection for out-of-State shipments in VIRGINIA. Damage was not observed until July 10. The second-brood larvae were mainly responsible for losses in Virginia. Epitrix spp. were heavy on unprotected potatoes, tomatoes and eggplants in all sections of MARYLAND during May and June. Potato flea beetle adults were present on potatoes throughout DELAWARE by mid-May and built up to high numbers in a few fields in New Castle County by late June. Populations of this flea beetle were generally high during August in Kent County. Adults of TOBACCO FLEA BEETLE (E. hirtipennis) were more numerous than usual in Delaware during May and again in August on tomatoes in Sussex County. Another leaf beetle, THREE-LINED POTATO BEETLE (Lema trilineata), was fairly numerous in a small field in RHODE ISLAND in Coventry, Kent County, but otherwise it was scarce in the State. Potato flea beetle was unusually scarce throughout the season in MAINE; summer-generation adults were present in trace numbers on potatoes only in mid-August. Potato flea beetle was general on tomatoes in Androscoggin and Sagadahoc Counties during early and mid-June. Moderate infestations and damage occurred on tomatoes in Portland, Cumberland County, during the same period.

Potato flea beetle caused extensive damage to potatoes in OHIO where this crop was not adequately sprayed. TUBER FLEA BEETLE (Epitrix tuberis) was widespread but not economically important in COLORADO in the Arkansas River Valley area. Tuber flea beetle was light in a few fields in the Montrose area, Montrose County, of western Colorado; in the northern area, populations reached economic levels in some fields. PALE-STRIPED FLEA BEETLE (Systena blanda) was numerous in the northern area of Colorado which had economic infestations; controls prevented losses. Tobacco flea beetle was quite severe on early tomato plantings in CALIFORNIA in Yolo, Butte, Sacramento, Santa Clara, San Diego and Alameda Counties.

A BLISTER BEETLE (Epicauta sp.) caused heavy damage to tomatoes in West Carroll Parish, LOUISIANA. Several species of BLISTER BEETLES damaged gardens in OKLAHOMA, especially tomatoes. Blister beetles were noted in many areas from mid-July until mid-September in Oklahoma. Several species, mostly CLEMATIS BLISTER BEETLE (Epicauta cinerea) and Epicauta sp. were numerous in late July in northeastern KANSAS on potatoes and tomatoes.

PACIFIC COAST WIREWORM (Limonius canus) adult activity began in late April in Grant County, WASHINGTON, and larvae were damaging potatoes by mid-June. GREAT BASIN WIREWORM (Ctenicera pruinina) destroyed pieces of seed potatoes in early May in that county. SOUTHERN POTATO WIREWORM (Conoderus falli) was at the lowest level in 9 years in the Hastings area of FLORIDA on potatoes; unspecified wireworms were more abundant than usual on potatoes at Homestead, due perhaps to reduced effectiveness of formerly effective insecticides.

PEPPER WEEVIL (Anthonomus eugenii) was locally damaging to chili peppers in Orange County, CALIFORNIA. Pepper weevil is routinely considered a potential or actual pest of peppers in the Immokalee area of FLORIDA.

BUCKTHORN APHID (Aphis nasturtii) and FOXGLOVE APHID (Acyrthosiphon solani) populations on potatoes in MAINE remained rather small throughout the season. Spring activity began in early June. Entomogenous fungi showed substantial increases during late August and were chiefly responsible for the strong decline in aphid numbers during that period. Spring migrants of POTATO APHID (Macrosiphum euphorbiae) and GREEN PEACH APHID (Myzus persicae) matured on swamp rose in early June in Maine. A survey June 8-9 showed that potato aphid and green peach aphid were unusually abundant on potatoes; however, numbers remained rather small throughout the season in Maine. A significant buildup of potato aphid developed in the potato-growing area of RHODE ISLAND during the dry period of July; it was also observed on tomatoes in the State. Green peach aphid was unusually abundant on potatoes in MASSACHUSETTS and difficulty in control was experienced in many areas. Green peach aphid and potato aphid were very numerous on potatoes in NEW YORK but effective insecticides held populations in check; potato aphid was occasionally troublesome on tomatoes in New York. Very high populations of green peach aphid developed on potatoes and some other crops in NEW JERSEY in August and September. Control was most difficult for many New Jersey potato growers. Very heavy infestations of green peach aphid occurred on sweet peppers in areas of Sussex County, DELAWARE, starting the second week of August. Green peach aphid was also noted on potatoes in Kent County during this period. Potato aphid populations were above normal in all sections of MARYLAND on potatoes and tomatoes; it was severe on tomato plants in one section of VIRGINIA. Unspecified APHIDS attacked pimento peppers in northern section of ALABAMA throughout the season. Aphids were also pests of potatoes and tomatoes. Green peach aphid populations were high at the end of the season in April and May in the Hastings area of FLORIDA. The usual amount of aphids was encountered in the Homestead area of that State. Green peach aphid was abundant on potatoes at Homestead, Florida, during February through March. Aphids were the only insect problem on young pepper plants grown in north central Florida for resetting in States farther north. When a systemic insecticide was used, the aphid problem was alleviated. Green peach aphid was very severe on peppers in Brandenton, Florida, where pesticide applications were neglected, but potato aphid was less abundant. Aphids were also important on seedling tomatoes grown in north central Florida for resetting in more northern States, but controls were effective.

Green peach aphid winged forms were numerous around potato fields of WASHINGTON in mid-July, but populations were reduced by hot weather in August. Potato aphid infested potatoes and tomatoes locally in CALIFORNIA in Fresno, Sacramento and Siskiyou Counties. APPLE GRAIN APHID (Rhopalosiphum fitchii) was reported in several California locations on tomatoes. Undetermined aphids were extremely prevalent in California and persisted well into the summer. Green peach aphid and potato aphid were found occasionally in the western section of COLORADO mainly in the Montrose area of Montrose County. One or 2 control applications were necessary. In the northern section of Colorado, populations reached economic levels by late August and September; timely control measures prevented losses. Green peach aphid and potato aphid were troublesome on untreated tomatoes and peppers in the truck-gardening areas of southern LOUISIANA.

GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) required constant attention on greenhouse tomatoes in OHIO. The first eggs of a WHITEFLY (Aleyrodes spiraeoides) were observed on nightshade in late May in Walla Walla County, WASHINGTON. The first adults were observed on potatoes in mid-July.

POTATO LEAFHOPPER (Empoasca fabae) was the most important insect attacking vegetable crops in OHIO. It caused serious damage to potatoes, peppers, eggplants and beans. Populations on unsprayed plants were about normal in Ohio. The first adults of the season in MICHIGAN were collected in late May in Livingston and Monroe Counties. Populations built up and were heavy in late June in Monroe and Allegan Counties. High populations continued in many areas of Lower Michigan during July and August on potatoes and other crops, but good spray programs kept problems low on potatoes. Heavy potato leafhopper populations occurred on potatoes in WISCONSIN and it was abundant through September 25 and persisted until October 23. SIX-SPOTTED LEAFHOPPER (Macrosteles fascifrons) occurred on potatoes grown in the valley of the Red River of the North in NORTH DAKOTA midway in the season. Potato leafhopper counts were reported as 3-4 per plant in potato fields in Ray County, MISSOURI.

BEET LEAFHOPPER (Circulifer tenellus) populations were reduced in the western section of COLORADO by the blanket spray program for control of this pest on sugar beets. This, in turn, kept the incidence of curly top disease in tomatoes down to 2-5 percent, which is low. Beet leafhopper was found in all sections of the Arkansas River Valley of Colorado, but damage was negligible. Six-spotted leafhopper was present at economic levels on potatoes in the northern section in late August and September; control measures prevented losses. Six-spotted leafhopper was also present on tomatoes in Colorado. Beet leafhopper caused serious losses to tomatoes in Iron County, UTAH, during 1964.

LEAFHOPPERS were serious pests of potatoes in ALABAMA. Potato leafhopper was a definite problem on several large potato plantings on the Eastern Shore of MARYLAND. Great numbers of potato leafhopper were found on potatoes in NEW JERSEY. In VERMONT, potato leafhopper was a problem on beans and potatoes in home gardens. Unidentified leafhoppers were moderate to heavy on unsprayed potato foliage in the central section of MAINE in early July.

POTATO PSYLLID (Paratrioza cockerelli) infestations were low in NEBRASKA early in the season. Populations built up in late August and September. A considerable amount of psyllid yellows occurred on potatoes and tomatoes in the western part of Nebraska. Potato psyllid attained higher populations and remained economically important longer in the Arkansas Valley of COLORADO than it had in several years. Adults in this 5-county area, Pueblo, Crowley, Otero, Bent and Prowers, maintained population levels of 100 per 100 sweeps on the wild host plant, matrimony-vine, into July. At the end of May, adults reached highs of 40 per 100 sweeps in untreated potato fields of the Arkansas Valley; thereafter, adults ranged 0-10 per 100 sweeps depending on controls. As many as 6 treatments were required on potatoes in the Arkansas Valley. Potato psyllid was found in trace numbers on potatoes in the western counties of Garfield, Mesa, Delta and Montrose early in the season but could not be picked up later in the season. This psyllid was not so large a problem on tomatoes in the Arkansas Valley as it was on potatoes although it was found in greater numbers in that part of Colorado. Extremely large populations were found on the potato-growing areas throughout WYOMING. Potato psyllid was first recovered in Laramie County in mid-June on both potatoes and matrimony-vine. Counts ranged 3-4 per 100 sweeps in most potato fields in southeastern Wyoming, but one field near Pine Bluffs, Laramie County, averaged 16 per 100 sweeps. Counts in the Big Horn Basin were somewhat lower, averaging 1 or 2 per 100 sweeps. Psyllid yellows damaged some tomatoes, but timely applications of systemic and contact insecticides held this disease to a small incidence on potatoes.

BROWN STINK BUG (Euschistus servus) and SOUTHERN GREEN STINK BUG (Nezara viridula) were light on tomatoes in GEORGIA. LEAF-FOOTED BUG (Leptoglossus phyllopus) was a minor pest of tomatoes in ALABAMA. Southern green stink bug was generally less abundant than usual in the Homestead area of FLORIDA on tomatoes. STINK BUGS, with Euschistus obscurus the predominant species, were heavy on tomatoes in LOUISIANA in Plaquemines and St. Bernard Parishes. FALSE CHINCH BUG (Nysus ericae) caused heavy damage in isolated spots in commercial potato fields in Ray County, MISSOURI; counts ranged 5-75 per leaf. An attack by HARLEQUIN BUG (Murgantia histrionica) defoliated eggplants and horseradishes in Gage County, NEBRASKA. False chinch bug occurred in nearly all potato fields of the Arkansas River Valley of COLORADO but sprays were applied specifically for this pest in only 2 fields. False chinch bug reached economic levels in the northern area of Colorado but controls prevented loss to potatoes. Nysius sp. was a pest of tomatoes in a few CALIFORNIA locations.

PEPPER MAGGOT (Zonosemata electa) infested commercial peppers in the Warren-Franklin County area of NORTH CAROLINA in late July. This was the second consecutive year for this area. Ten acres of commercial peppers in Nash County, North Carolina, were also infested at that time. Pepper maggot was a serious problem again in NEW JERSEY mainly in the southern part of the State where peppers are grown. A LEAF MINER FLY (Liriomyza munda) required constant attention on greenhouse tomatoes in OHIO. Leaf mines caused by Liriomyza spp. were probably less abundant than usual on tomatoes at Homestead, FLORIDA; a rather tight control schedule was required in the Fort Pierce area. Leaf miner flies were probably slightly more abundant in that part of Florida on tomatoes than they were in 1963. L. munda and L. trifolii were very severe on tomatoes at all times of the year in the Bradenton area of Florida. A VINEGAR FLY (Drosophila melanogaster) was locally heavy in a few CALIFORNIA locations, particularly on tomatoes. This problem has been reduced by sanitation methods.

A THRIPS (probably Taeniothrips orionis) was very numerous on a number of potato blossoms in ALASKA where it was reported to have destroyed pollen to a considerable extent at the Matanuska Experiment Station. THRIPS lightly infested tomatoes in VIRGINIA. Thrips are routinely considered a potential or actual problem on peppers in the Immokalee area of FLORIDA.

TWO-SPOTTED SPIDER MITE (Tetranychus telarius) was very heavy on tomatoes in mid-August in DELAWARE and caused severe injury in areas of Sussex County. SPIDER MITES caused a very serious problem on tomatoes and eggplants in

NEW JERSEY. Tetranychus spp. damaged tomatoes and other vegetables from early June to mid-September in OKLAHOMA. Populations of TOMATO RUSSET MITE (Aculus lycopersici) varied on tomatoes in CALIFORNIA from Santa Barbara County northward.

SPRINGTAILS damaged and usually killed young pepper seedlings in home gardens in the Socorro area of NEW MEXICO during May. Entomobrya unostrigata was particularly troublesome in tomato seedbeds and early set tomatoes in Yolo County, CALIFORNIA.

GARDEN SYMPHYLAN (Scutigerella immaculata) damaged potatoes in the lower Yakima Valley of WASHINGTON. Garden symphylan reached economic levels in numerous potato fields in northern COLORADO but controls prevented losses.

CRUCIFER INSECTS

Highlights:

NOCTUID MOTHS and other moths, particularly IMPORTED CABBAGEWORM, were destructive to crucifers in nearly all States reporting. Both home gardens and commercial fields had difficulty with these pests. APHIDS were also troublesome on crucifers. CABBAGE MAGGOT was severe in Maine, New York and North Carolina. Populations and injury to cabbage was the highest reported in many years in Wisconsin. ROOT MAGGOTS, primarilally TURNIP MAGGOT, were the most consistent and widespread problem in Alaska. FLEA BEETLES were the primary coleopterous pests of crucifers, although a WEEVIL (Brachyrhinus cribricollis) was quite severe on broccoli in California.

CABBAGE LOOPER (Trichoplusia ni) was definitely worse than in 1963 in the Sanford area of FLORIDA. It is rated as more of a pest in 1964 than for an average year. This is true for cauliflower as well as cabbage in that area. At Hastings, cabbage looper populations were high early and late in the season as usual, the season being from November to March. This looper destroyed late, unsprayed cabbage in that area. Cabbage looper was extremely abundant on all cruciferous crops such as cabbage, cauliflower, turnips and rutabagas in Bradenton, Florida. Cabbage looper was the most damaging pest of crucifers in ALABAMA in 1964. This noctuid moth damaged commercial cabbage near Beaufort, Carteret County, NORTH CAROLINA, during the third week of May and larvae were a severe problem to commercial and home growers in all areas of the State. Cabbage looper was difficult to control on fall cabbage in the northeastern commercial area of North Carolina. This looper was generally light on crucifers in MARYLAND but it became abundant and destructive to plantings of cabbage and broccoli over a wide area in August and September. Cabbage looper was very numerous on cabbage and broccoli during late August and early September in DELAWARE in Kent County. This pest was extremely severe on cole crops in NEW JERSEY where many growers failed to control this insect in late August and early September. On Long Island, NEW YORK, cabbage looper was severe on crucifers and difficult to control. It was prevalent on crucifers in VERMONT.

Cabbage looper and related species were unusually abundant and apparently difficult to control in WISCONSIN; damage occurred in Columbia, Racine and Kenosha Counties on commercial cabbage and commercial broccoli and brussels sprouts were damaged severely in Bayfield County. Cabbages in home gardens of KANSAS were destroyed where adequate controls were not used; commercial growers in Kansas also had difficulty controlling this pest. Turnip greens in Angelina County, TEXAS, were damaged, as well as cabbage over most of the State. Cabbage looper was generally moderate to heavy in the southern part of LOUISIANA on cole crops. This noctuid moth was medium to heavy on cabbage and other truck crops in ARIZONA and controls were often ineffective. Some parasitism occurred in Yuma County.

ZEBRA CATERPILLAR (Ceramica picta) was noted in isolated instances in NORTH DAKOTA where larvae attacked cabbage in the southeastern area. CUTWORMS were light to moderate on cabbage in the middle section of GEORGIA. Cutworms were heavy locally on early plantings of cabbage in the Hastings area of FLORIDA. Cutworms, particularly GRANULATE CUTWORM (Feltia subterranea), were very injurious to cabbage in the Belle Glade area. Peak populations occurred in April; however, considerable injury caused by cutworms appeared again in November and December. Cabbage looper is often credited with damage caused by granulate cutworm in Florida as these larvae commonly bore into cabbage heads and remain there throughout the day, returning to the soil only for pupation. Untreated cabbage will sometimes have 25-50 percent of the heads attacked by granulate cutworm in the Belle Glade area of Florida.

IMPORTED CABBAGEWORM (Pieris rapae) adults were in flight in Orono area, Penobscot County, MAINE, on May 2 and in Aroostook County by May 26. Moderate infestations with general damage occurred throughout Androscoggin and Sagadohoc Counties on cabbage and cauliflower in early and mid-June. In VERMONT, imported cabbageworm was prevalent on crucifers. It was present but caused no concern in RHODE ISLAND. This pest was plentiful and troublesome early in the season in NEW YORK. Infestations in MARYLAND were conspicuous on several cole crops in all sections with heavy damage occurring in home gardens. Only localized damage was reported on cole crops in VIRGINIA. Imported cabbageworm was very damaging to crucifers in ALABAMA in 1964. This pest ranged very few to none on crucifers in the Sanford area of FLORIDA.

Imported cabbageworm ranged moderate to heavy on cole crops in LOUISIANA generally in the southern part of the State. Larvae caused considerable damage to cabbage in fields of NEW MEXICO in Valencia and Bernalillo Counties during July. Imported cabbageworm caused the destruction of cabbages in home gardens of KANSAS where adequate controls were not applied; commercial growers also had difficulty in controlling this pest. This pierid butterfly was light in cabbages in COLORADO but some fields required controls. Imported cabbageworm was severe on cole crops in most eastern areas of NORTH DAKOTA.

DIAMONDBACK MOTH (Plutella maculipennis) damaged cabbage in Parmer County, TEXAS. This pest was moderate to heavy on cole crops of LOUISIANA, generally in the southern part of the State. Diamondback moth and unspecified WEBWORMS damaged crucifers in ALABAMA. Larvae of diamondback moth caused localized damage in VIRGINIA on cole crops. This pest was plentiful and troublesome in NEW YORK.

CABBAGE APHID (Brevicoryne brassicae) and GREEN PEACH APHID (Myzus persicae) were very light on crucifers and even on cabbage in the early stage at Sanford, FLORIDA. Cabbage aphid was heavy on brussels sprouts and rutabaga and low on cabbage at Hastings. Cabbage aphid damage was spotty on crucifers at Belle Glade area while green peach aphid was generally present but in low numbers in that part of Florida. Cabbage aphid ranged light to moderate on commercial cabbage plants grown for plants and for the fresh market in GEORGIA. APHIDS, including TURNIP APHID Hyadaphis pseudobrassicae), POPLAR PETIOLE GALL APHID (Pemphigus populitransversus) and cabbage aphid damaged crucifers in ALABAMA. Cabbage aphid required controls in VIRGINIA on seed kale and collards. Cabbage aphid was light and inconsequential on Long Island, but it was extremely heavy in other parts of NEW YORK. Moderate populations of cabbage aphid caused light injury to cabbage in MAINE in Cape Elizabeth, Cumberland County, in late August.

Turnip aphid was very common on turnips in OHIO. Unspecified aphids were present on greens in OKLAHOMA. Poplar petiole gall aphid damaged cabbage over a wide area of the Rio Grande Valley of TEXAS. Cabbage aphid required controls all year in CALIFORNIA on cole crops in all areas.

HARLEQUIN BUG (Murgantia histrionica) damaged crucifers in ALABAMA. This bug was moderate to heavy in collards, cabbages and turnips in GEORGIA and was general over the State. This stink bug defoliated horseradish and eggplants in Gage County, NEBRASKA. A PYRRHOCORID BUG (Largus cinctus californicus) damaged Swiss chard plantings in San Luis Obispo County, CALIFORNIA, in October.

CABBAGE MAGGOT (Hylemya brassicae) egg deposition on cabbage was heavy in early June in MAINE in the Cape Elizabeth area of Cumberland County. High maggot populations and severe damage to radishes was observed in that county at Scarboro during the same period. Damage and infestations on radishes in Androscoggin and Sagadahoc Counties of Maine were light in early June. Flies of this species were very active in Hampden and Hampshire Counties of MASSACHUSETTS where in some fields practically all plants had 2-7 eggs deposited near stems. Cabbage maggot was more troublesome than usual in RHODE ISLAND in 1964. This maggot was severe in some locations in NEW YORK and control measures gave poor results. Unspecified ROOT MAGGOTS caused 10-20 percent damage to heads of cabbages in PENNSYLVANIA in the central section of the State. LEAF MINER FLIES (Liriomyza munda and L. trifolii) were severe on mustard in th Bradenton area of FLORIDA.

Root maggots, primarily TURNIP MAGGOT (Hylemya floralis), were the most consistent and widespread insect problem as usual in ALASKA on susceptible crucifers but the season began later than normal. Cabbage maggot was generally light in the western part of WASHINGTON but resistance to an insecticide was recorded on San Juan Island. Cabbage maggot damaged cole crops in Santa Cruz and San Mateo Counties of CALIFORNIA. Populations and injury caused by cabbage maggot was the highest reported in many years in WISCONSIN. This maggot caused considerable damage to radishes in Anoka County, MINNESOTA, at Anoka.

FLEA BEETLES were plentiful and required controls on crucifers in NEW YORK. Rather heavy feeding injury caused by Phyllotreta cruciferae occurred on young cabbage in early May and on horseradish in June in DELAWARE. In MARYLAND, P. cruciferae was unusually injurious to cabbage, turnips, radishes and other crucifers at several locations during May and June. Several species of flea beetles and WIREWORMS were damaging to crucifers in ALABAMA in 1964. An unspecified LEAF BEETLE badly damaged some young mustard plants locally in Gainesville, FLORIDA, but it has not been determined how widespread this infestation may be. A WEEVIL (Brachyrhinus cribricollis) was quite severe on broccoli in Santa Barbara County, CALIFORNIA.

EUROPEAN EARWIG (Forficula auricularia) was heavy on cabbage and broccoli in Lackawanna County, PENNSYLVANIA, and an unidentified THRIPS rendered an entire field of cabbage unsaleable in York County. ONION THRIPS (Thrips tabaci) caused moderate damage to cabbage and other crops in OHIO early in the summer.

BEAN, PEA AND OTHER LEGUME INSECTS

Highlights:

MEXICAN BEAN BEETLE is the most important pest of table legumes in North Carolina and caused more injury than usual in the bean-producing areas of Michigan. This beetle, first found in Kansas in 1961, has spread to Atchison and Brown Counties. Several States indicate that Mexican bean beetle was less troublesome than usual. An outbreak of GREEN CLOVERWORM occurred in Michigan bean fields in late July and continued through the third week of August and an unusually widespread infestation occurred in New York on beans in August. The first real CUTWORM outbreak in 5 years occurred in Alaska when peas were attacked by several species, especially RED-BACKED CUTWORM and BLACK CUTWORM.

MEXICAN BEAN BEETLE (Epilachna varivestis) was one of the major pests of pole beans in the Quincy area of FLORIDA; losses to this crop were light. Mexican bean beetle overwintered in tremendous numbers in ALABAMA. It appeared throughout the State in April and became a major pest of peas and beans throughout the year in Alabama. In GEORGIA, this pest was light to heavy on pole, bunch and lima beans. Mexican bean beetle continued to be the most troublesome pest of commercial and home garden beans in all areas of NORTH CAROLINA. This leaf-feeding lady beetle was about normal in MARYLAND where it caused considerable but scattered damage to pole, snap and lima beans in all sections. Numbers were heaviest on untreated home gardens in Maryland. Mexican bean beetle was not a problem in NEW YORK in 1964; present in normal abundance in RHODE ISLAND and generally scarce throughout NEW HAMPSHIRE, a condition which has been noted for several years in that State. Mexican bean beetle caused light damage to dry beans in Woolwich, Sagadahoc County, MAINE.

Mexican bean beetle numbers increased in northeastern KANSAS. The first collection in the State was made at Armourdale district of Wyandotte County in 1961. New county records in Kansas for 1964 included Atchison and Brown. Complaints of injury to garden beans were numerous by June 25 and injury was again reported serious in gardens in the fall in Kansas. Mexican bean beetle was slightly more abundant in WYOMING than it was in 1963, but it caused only very light damage in the Platte County area. The first specimens were recovered in mid-June in Platte County where larvae and adults averaged 12 per sweep in infested fields. Very little control effort was made in Wyoming. Light populations occurred on beans in COLORADO; adults appeared on pinto beans in the western section in light numbers in July. Some controls were used in that area. In the Arkansas Valley area of Colorado, trace numbers were found in Otero and Pueblo Counties; no damage occurred. Mexican bean beetle damaged the foliage of pole and bush beans in gardens in Bernalillo, Valencia and Sandoval Counties of NEW MEXICO. Lighter infestations were found in Torrance County.

BEAN LEAF BEETLE (Cerotoma trifurcata) overwintered in ALABAMA in tremendous numbers; it appeared throughout the State in April and became a major pest on beans and peas for the remainder of the year. Bean leaf beetle was light to heavy on pole, bunch and lima beans in GEORGIA. Adults of bean leaf beetle were below normal on snap and lima beans in all sections of MARYLAND. High adult populations of a FLEA BEETLE (Phyllotreta cruciferae) were noted on peas in DELAWARE in late April. Bean leaf beetle was reported feeding on truck crops and gardens in MISSOURI.

COWPEA CURCULIO (Chalcodermus aeneus) was a serious pest of peas and beans in ALASKA and damaged southern peas in the Rio Grande Valley of TEXAS. ROSE CHAFER (Macrodactylus subspinosus) was noted feeding on beans in VERMONT.

GREEN CLOVERWORM (Plathypena scabra) outbreak occurred in MICHIGAN in field beans. The larval outbreak began in late July and continued through the third week of August with declining numbers continuing in some fields of navy and red kidney beans until mid-September. A general infestation occurred over the entire bean-growing areas of the "thumb" and Saginaw Valley and extended westward into Ionia and Montcalm Counties. Widespread application of insecticides, mostly by aircraft, was made. Some fields were treated unnecessarily because of poor timing and/or light infestations. Highest recorded counts were made August 4 in Saginaw County where 200 or more larvae per 25 feet of row were dislodged by shaking. Injury to young pods and foliage ranged from light to heavy among fields of navy and red kidney beans. Data on adult collections at blacklight traps were obtained at various stations. Adults continued to be taken throughout September and were sampled as far north as Iron and Menomiee Counties. This is the first year that this species reached outbreak proportions in Michigan. CABBAGE LOOPER (Trichoplusia ni) and related species were unusually abundant and apparently difficult to control in WISCONSIN. Larvae were common in scattered pea fields and beans were damaged in the northeast and central parts of the State.

Green cloverworm populations were heavier and more widespread in upstate NEW YORK on beans than previously reported. This infestation was first detected on August 8. Infestations were heaviest on white kidney beans and lightest on pea beans and black turtle soup beans in New York. Heavy infestations of TOMATO FRUITWORM (Heliothis zea) occurred in snap beans and late planted lima beans during early September in DELAWARE following heavy flights of adults in late August. CUTWORMS were present and damaging on peas and beans in ALABAMA but were of minor importance. Tomato fruitworm was one of the major pests of pole beans in FLORIDA in the Quincy area. Infestations of a NOCTUID MOTH (Pseudoplusia includens) were light and of minor importance on beans in that area. In the muck area of Zellwood, Orange County, Florida, Agrotis spp., cabbage looper, and FALL ARMYWORM (Spodoptera frugiperda) caused considerable trouble to pole beans during the spring. At Belle Glade, Florida, cutworms, particularly GRANULATE CUTWORM (Feltia subterranea), were very injurious to beans. Populations reached a peak in April but they caused considerable injury again during November and December. Tomato fruitworm appears to be more injurious to beans and southern peas in Florida than in the past and a complex of this noctuid moth plus fall armyworm, SOUTHERN ARMYWORM (Prodenia eridania) and SALT-MARSH CATERPILLAR (Estigmene acrea) caused damage to pods of table legumes both on the coast and in the Everglades. Complaints were received from growers concerning similar damage during October and November but it seems likely that damage in the fall was lighter than during the spring. Tomato fruitworm and armyworms were light and cabbage looper was heavy in some fields in the Belle Glade area on bush beans and at harvest, cabbage looper averaged nearly 1 per plant and was very difficult to control with insecticides.

Several cutworm species, especially RED-BACKED CUTWORM (Euxoa ochrogaster) and BLACK CUTWORM (Agrotis ipsilon), required widespread treatments in ALASKA. New stands of peas were cut off for the first real outbreak in 5 years in Alaska. Tomato fruitworm infestations continued in beans statewide in CALIFORNIA. WESTERN BEAN CUTWORM (Loxagrotis albicosta) was present in light numbers on beans in COLORADO. Tomato fruitworm was a problem on fall-grown snap beans in ARKANSAS.

Other lepidopterous pests of legumes included EUROPEAN CORN BORER (Ostrinia nubilalis) in MISSOURI where larvae were found in 70-90 percent (35 percent of the pods) of purple-hulled peas over a 500-acre area in southeastern Missouri. LESSER CORNSTALK BORER (Elasmopalpus lignosellus) was a minor problem on southern peas and snap beans in ARKANSAS in August in the southwestern section. This pest was generally light to moderate on peas and beans in GEORGIA and a serious pest of these crops in ALABAMA. European corn borer damaged 20 acres of green beans in Clinton County, PENNSYLVANIA, and rendered the crop unsaleable. At Homestead, FLORIDA, BEAN LEAF ROLLER (Urbanus proteus) was abundant as usual on beans.

BEAN APHID (Aphis fabae) populations were high on pole beans in Clark County, WASHINGTON, in early July. This aphid was a problem on lima beans in several CALIFORNIA counties.

PEA APHID (Acyrthosiphon pisum) winged forms were noted in peas by May 15 in WISCONSIN but populations remained low throughout the growing season, averaging about 2-4 per sweep. Damage in Wisconsin was minimal or nonexistent. Pea aphid was not a pest of peas in NEW YORK in 1964. This aphid was present on commercial peas in DELAWARE by mid-April with noticeable population increases in a few fields by the first week of May. High numbers were present on untreated peas during mid-May until harvest in Delaware. Populations of pea aphid were somewhat below normal on peas in all sections of MARYLAND. APHIDS were present and damaging to peas and beans in ALABAMA. Black aphids, probably bean aphid and COWPEA APHID (Aphis craccivora), were troublesome in some plantings of beans and southern peas during the spring in the Belle Glade area of FLORIDA.

POTATO LEAFHOPPER (Empoasca fabae) was the most important insect attacking vegetables in OHIO. It caused serious damage to beans and other crops. Populations on unsprayed plants in Ohio were about normal. The first adults of this leafhopper were collected in late May in Livingston and Monroe Counties of MICHIGAN. Populations built up and were heavy in late June in Monroe and Allegan Counties. High populations continued in many locations of Lower Michigan during

July and August on beans and other crops. Snap and lima beans had heavy populations in WISCONSIN which were abundant until September 25 and persisted until October 23.

Potato leafhopper populations were again above normal in MARYLAND and caused conspicuous foliage injury to snap and lima beans on the Eastern Shore during July and August. Potato leafhopper was generally light on lima beans in DELAWARE. Peak populations occurred during late July and late August. Some fields of snap beans had high populations by late May in Delaware. Potato leafhopper was a problem on beans in home gardens of VERMONT. In 1962, a LEAFHOPPER (Empoasca kraemeri) was so common in FLORIDA that it seemed as if control materials had lost their effectiveness. In 1963, this leafhopper was no problem but it became abundant again in 1964 in beans at Homestead, although not to the degree it was in 1962.

PLANT BUG (Heterotoma meriopterum) was recorded on scarlet runner beans in San Juan County, WASHINGTON. LYGUS BUGS (Lygus spp.) required control on beans throughout CALIFORNIA and FALSE CHINCH BUGS (Nysius spp.) were pests of beans in a few locations. CONCHUELA (Chlorochroa ligata) caused damage to black-eyed peas in the La Salle County area of TEXAS. TARNISHED PLANT BUG (Lygus lineolaris) was heavy on peas early in the season in DELAWARE. The population peak on lima beans occurred from mid-July to early August.

THRIPS, including Sericothrips variabilis, were very heavy on lima beans during late May and June in DELAWARE; high numbers also occurred in August. Unspecified thrips were heavy on commercial beans in the southern section of GEORGIA. ONION THRIPS (Thrips tabaci) caused moderate damage to beans and other crops in OHIO early in the summer. Thrips were light on beans in COLORADO.

SEED-CORN MAGGOT (Hylemya platura) infestations and damage was heavy on snap beans in Canton, Oxford County, MAINE, in early August. The injury had obviously taken place earlier in the season on treated seed. In NEW YORK, seed-corn maggot was a problem on beans. Seed-corn maggot was heavy on garden beans in April at Hastings, FLORIDA. LEAF MINER FLIES appeared quite heavy on beans and southern peas at Belle Glade, but there is some experimental evidence that the yield was not materially reduced. It may be that disease organisms that invade the mines do more damage than the maggots. Southern peas and beans at Bradenton, Florida, were heavily infested by Liriomyza munda and L. trifolii.

SPIDER MITES were of considerable importance on snap beans in some areas of ALABAMA. Tetranychus spp. were a midsummer problem in several lima bean fields on the Eastern Shore of MARYLAND. TWO-SPOTTED SPIDER MITE (T. telarius) was very heavy on bean foliage in Cranston, Providence County, RHODE ISLAND, in mid-July. Two-spotted spider mite was light on beans in COLORADO.

In WASHINGTON, GRAY GARDEN SLUG (Deroceras reticulatum) caused severe damage to pole beans in Clark County in late June. The cool, wet season probably was favorable for the very destructive population of GARDEN SYMPHYLAN (Scutigerella immaculata) on beans in the southwestern part of Washington.

ASPARAGUS, ONION AND GARLIC INSECTS

ASPARAGUS BEETLE (Crioceris asparagi) adults were about normal early in the season on commercial asparagus in MARYLAND. Adults and larvae on foliage during the summer were generally light except for some heavily damaged home garden plantings in Maryland. C. asparagi was generally under excellent control in most areas of DELAWARE; light feeding injury was noted in New Castle County during mid-April. Both asparagus beetle and SPOTTED ASPARAGUS BEETLE (C. duodecimpunctata) were present in average abundance in RHODE ISLAND from June through August. In MAINE, C. duodecimpunctata infestations and damage were light on asparagus in Auburn, Androscoggin County, in mid-June.

Both asparagus beetle and spotted asparagus beetle caused heavy injury in southwestern MICHIGAN during May. Egg laying and feeding injury were widespread by May 15. More rigid control measures were required in Michigan. C. duodecimpunctata was abundant in the southern one-third of NORTH DAKOTA on asparagus. C. asparagi was abundant enough in a 2-acre planting near Wathena, Doniphan County, KANSAS, to cause abandonment. C. asparagi was medium on asparagus plantings in Fountain Valley, Orange County, CALIFORNIA.

ONION MAGGOT (Hylemya antiqua) was present in ALASKA but it was of minor importance. Generally light infestations of this maggot occurred in the western part of WASHINGTON. Onion maggot and SEED-CORN MAGGOT (H. platura) were noted in only a few fields in western COLORADO where onion bulbs infected with Fusarium spp. were decomposing. These maggots were not a problem on healthy plants; no controls were needed in western Colorado. Onion maggot was found infesting onions in the Vineland area of Pueblo County, Colorado, with populations of 0-60 per plant, depending upon controls. Buildup after control measures were applied appeared to be very slow. Many growers in Pueblo County were able to obtain good control with only 2 applications. Onion maggot continued to be a problem in the south central district of MINNESOTA. This maggot was destructive in several areas of WISCONSIN in late June. The heaviest infestations of several years were reported from Eau Claire County.

ONION THRIPS (Thrips tabaci) was noted in all onion fields in the Arkansas Valley of COLORADO during the growing season. Populations varied from 0 to 60 per plant, depending upon application of controls. Populations built up slowly following controls and many growers obtained good control with only 2 applications. In western Colorado, good control was obtained with 1-2 sprays also. Frequent showers helped keep the population down for the remainder of the season. Some damage occurred on onions in the northern part of Colorado. Onion thrips was heavy on garlic in Washoe County, NEVADA, in June and on onions in Clark County. Onion thrips was a problem in Imperial, Solano and Santa Clara Counties, CALIFORNIA. THRIPS were light to heavy on onions in the Mesilla Valley of NEW MEXICO during the spring months. Only a few growers treated fields for thrips. Onion thrips damaged onions in the onion-growing areas of TEXAS.

In COLORADO, CUTWORMS caused some damage to onions in the western section and SIX-SPOTTED LEAFHOPPER (Macrosteles fascifrons) was a pest of onions in the Arkansas Valley and in the northern section of the State late in the season. BROWN WHEAT MITE (Petrobia latens) was medium on garlic in Lyon County, NEVADA, in May. A SPIDER MITE (Aplonobia myops) was particularly heavy on asparagus in the delta region of Sacramento County, CALIFORNIA. MILLIPEDS damaged asparagus in the lower Yakima Valley of WASHINGTON.

BEET, SUGAR BEET AND SPINACH INSECTS

Highlights:

Incidence of curly top transmitted by BEET LEAFHOPPER was kept to under 5 percent in the sugar beet producing States with the exception of Washington where 40 percent incidence was recorded. APHIDS were also apparently more troublesome in Washington than in other sugar beet areas; SUGAR-BEET ROOT APHID was recorded for the first time in the Columbia Basin. YELLOW-STRIPED ARMYWORM and BEET ARMYWORM were the more important pests of sugar beets in Colorado; elsewhere lepidopterous larvae were generally well controlled. FLEA BEETLE infestations were heavy on seedling sugar beets for the second year in Nevada and STRIPED FLEA BEETLE caused severe, localized damage to sugar beet seedlings in Wyoming. These and other flea beetle infestations were controlled by sprays, however.

BEET LEAFHOPPER (Circulifer tenellus) appeared in all areas of COLORADO. In the Arkansas Valley numbers varied 0-50 per 100 sweeps. Symptoms of curly top disease appeared late in the season and damage was considered to be less than 5 percent. In the western part of Colorado, counts reached 1 per square foot by the latter part of June and controls were applied to 95 percent of the fields. The low incidence of curly top in western Colorado was attributed to well-timed control efforts. Beet leafhopper caused light losses in the southeastern section of Colorado. Curly top again damaged sugar beets in Hot Springs, Washakie and Big Horn Counties of WYOMING; however, damage was somewhat lower than in 1963. The first specimen of the season was recovered on April 9 in a survey of wasteland adjacent to beet-growing areas of Washakie County. Surveys in late May and early June revealed 0-4 per square foot sample and averaged 0.25 leafhoppers per square foot on weed hosts. A cooperative control program conducted on 3,600 acres of wasteland area in Washakie County may have contributed to the decline in the amount of curly top found. Curly top averaged about one percent in fields in that area of Wyoming. Beet leafhopper caused an estimated 4 percent loss in yield in NEVADA by transmitting curly top disease virus to sugar beets in Churchill County. In CALIFORNIA, control treatments to approximately 218,500 acres of range and brushlands were applied in 1964. Control was adequate with less than a one percent infection of curly top in susceptible crops. Some beet fields developed curly top during the season, particularly in areas adjacent to overwintering area in the beet plantings in the Imperial Valley of California. Beet leafhopper was abundant in sugar beets in WASHINGTON and caused a 40 percent incidence of curly top disease in the Walla Walla area by late June.

LYGUS BUGS (Lygus hesperus and L. elisus) damaged sugar beets after the first cutting of alfalfa in late June in Walla Walla County, WASHINGTON. Lygus spp. averaged 2.6 per sweep in early July in sugar beet seed crop in UTAH in the Avon-Paradise area of Cache County; this infestation was lower than normal for the 1964 season. FALSE CHINCH BUG (Nysius ericae) caused some losses to sugar beets in COLORADO. Adults of a PIESMID BUG (Piesma cinercum) were widely scattered in NEBRASKA where they fed on pigweeds and sugar beets.

SUGAR-BEET ROOT APHID (Pemphigus betae) fall migrants developed on sugar beet roots in late September in WASHINGTON which was the first record of this aphid in the Columbia Basin. Colonies of BEAN APHID (Aphis fabae) were established on sugar beets by early June in Walla Walla County and colonies of GREEN PEACH APHID (Myzus persicae) developed on sugar beets growing on cull piles by early April. Winged forms were present by late April in Walla Walla County with migration to young beet plants during May. Virus yellows developed by late June in sugar beets in that county. Populations were reduced by hot weather in August. The first fall migrants of green peach aphid returned to peach trees in late September in Washington. MELON APHID (Aphis gossypii) infested spinach in a few CALIFORNIA counties. Green peach aphid caused trace losses to sugar beets in the northeastern section of COLORADO.

WESTERN YELLOW-STRIPED ARMYWORM (Prodenia praefica), ZEBRA CATERPILLAR (Ceramica picta) and an unspecified CUTWORM reached light to medium infestations on sugar beets in Churchill County, NEVADA, in June but declined substantially by the first week in July. The most serious threats to sugar beets in western COLORADO were YELLOW-STRIPED ARMYWORM (P. ornithogalli) and BEET ARMYWORM (Spodoptera exigua). Heavy populations developed in the Loma-Fruita areas of Mesa County with as high as 20 larvae per plant. As many as 4 spray applications were made by air, with poor control in all cases. After the larvae pupated in the soil, the second-generation moths dispersed over a wider area and were not so destructive in Colorado.

CABBAGE LOOPER (Trichoplusia ni) was found in December in FLORIDA where small numbers of larvae were feeding on spinach at Zellwood. Larvae of this noctuid moth were troublesome at canning and packing times. Usually there is little trouble with this pest on spinach. Cutworms (Agrotis spp.) were moderate to heavy in some fields of spinach at Zellwood but they were not generally severe.

BEET WEBWORM (Loxostege sticticalis) damage was very slight in all areas of WYOMING and caused much less concern than in 1963. The first larvae of the season were collected in the Big Horn Basin on June 25. Only spotty infestations were present, and only a small amount of controls were required. The most heavily infested fields in Wyoming averaged 6-8 per beet plant. Beet webworm ranged light to moderate in the western section of COLORADO. Some weedy fields required controls. Light damage occurred in various fields throughout the Arkansas Valley during June when population reached highs of 50 per 100 sweeps (generally varied 0-20 per 100 sweeps). Trace numbers of loss occurred in the northeastern section of Colorado and some losses occurred in southeastern and western sections. SOUTHERN BEET WEBWORM (Pachyzancla bipunctalis) was moderate to heavy on early spinach at Zellwood, FLORIDA, in November and December when it damaged new growth buds.

SPINACH LEAF MINER (Pegomya hyoscyami) became abundant on sugar beets in Yakima and Walla Walla Counties of WASHINGTON by late May; eggs were numerous in August. In WYOMING, this fly was of concern to sugar beet growers throughout the State. Damage to sugar beet leaves was not so severe as in 1963, and little, if no, reduction resulted from larval feeding. Sugar beet plants averaged 42 percent infested in southeastern areas of Wyoming and 36 percent infested in northern beet-growing areas. Damage to sugar beet foliage in UTAH was light to moderate in 1964; the most serious damage in 20 years occurred in 1963. This maggot caused light losses in southeastern sections of COLORADO and this species and SUGAR-BEET ROOT MAGGOT (Tenanops myopaeformis) caused trace losses in northeastern sections. Spinach leaf miner was occasionally reported throughout VIRGINIA.

STRIPED FLEA BEETLE (Phyllotreta striolata) was first recovered on June 16 in Platte County, WYOMING, where it caused severe, localized damage to sugar beet seedlings. The most heavily infested fields ranged 8-12 adults per plant. Other fields in the southeastern area ranged 12-28 per 100 sweeps. Populations in northern areas averaged 10 per 100 sweeps with little damage noted in all instances. This flea beetle was more abundant in Wyoming than it was in 1963. PALE-STRIPED FLEA BEETLE (Systena blanda) and Epitrix sp. were present on sugar beets in COLORADO where they caused some losses. Infestations of FLEA BEETLES on sugar beet seedlings were heavy for the second consecutive year in Pershing County, NEVADA, but damage was insignificant due to control measures. Very light damage occurred in Churchill County and none was reported in Washoe County.

Other pests of sugar beets included: TWO-SPOTTED SPIDER MITE (Tetranychus telarius) in WASHINGTON where about 75 per leaf were noted in Grant County during early October; populations declined 96 percent by late October. A FIELD CRICKET (Gryllus sp.) was locally heavy in Imperial County, CALIFORNIA and GARDEN SYMPHYLAN (Scutigerella immaculata) caused trace amounts of losses to sugar beets in the northeastern part of COLORADO. An ACARID MITE (Tyrophagus dimidiatus) occurred in spinach plantings in Orange County, CALIFORNIA.

ARTICHOKE, ESCAROLE AND LETTUCE INSECTS

Several noctuid moths were important on lettuce in ARIZONA. Heavy infestations of BEET ARMYWORM (Spodoptera exigua) caused considerable damage to late winter lettuce in Yuma and Maricopa Counties. Heavy control applications were necessary to prevent serious damage. CABBAGE LOOPER (Trichoplusia ni) was medium to heavy on lettuce and other truck crops. Controls were often ineffective; some parasitism occurred in Yuma County. Light to moderate infestations of TOMATO FRUITWORM (Heliothis zea) required light control efforts during October and November in lettuce fields of Yuma and Maricopa Counties of Arizona. Beet armyworm was a problem in Dona Ana County, NEW MEXICO, lettuce fields during August and September but only spotty infestations of cabbage looper occurred in that county and in

Valencia County. Insecticides kept losses on lettuce to a minimum in COLORADO. Cabbage looper was light on lettuce and escarole at Sanford, Seminole County, FLORIDA.

ARTICHOKE PLUME MOTH (Platyptilia carduidactyla) was quite severe on artichokes in Santa Barbara, San Mateo and Humboldt Counties of CALIFORNIA.

GREEN PEACH APHID (Myzus persicae) spring infestations were troublesome on lettuce in Yuma and Maricopa Counties, ARIZONA, during March and April. An unspecified ROOT APHID was present on lettuce late in the season in COLORADO. Green peach aphid required constant attention on greenhouse lettuce in OHIO. Moderate numbers of Pemphigus bursarius caused moderate damage and heavy infestation of at least 2 unidentified aphid species caused heavy damage to lettuce in Cape Elizabeth, Cumberland County, MAINE, in late August. Lady beetles in appreciable numbers fed on the aphids.

SIX-SPOTTED LEAFHOPPER (Macrosteles fascifrons) caused some yellows on lettuce in a few COLORADO fields. Adults of six-spotted leafhopper were noted dispersing into lettuce fields of WISCONSIN in mid-June and some yellowing occurred that month. Populations were generally high but occurrence of yellows was lower than in 1963. This leafhopper was heavy on lettuce in Scarboro, Cumberland County, MAINE, in early June. Other infestations in the State were moderate in size and damage.

A SAP BEETLE (Conotelus mexicanus) caused considerable damage to lettuce heads before they were fully formed in the Mesilla Valley of Dona Ana County, NEW MEXICO. Control was difficult after the leaves began to form tight heads. A WEEVIL (Brachyrhinus cribricollis) was quite severe in artichokes in Santa Barbara County, CALIFORNIA. Unidentified SLUGS caused heavy damage to lettuce in Orono, Penobscot County, MAINE, in mid-August. Only moderate populations were involved.

CUCURBIT INSECTS

PICKLEWORM (Diaphania nitidalis) was heavy on garden summer squash in FLORIDA during April at Hastings. This pyraustid moth was much less abundant in Gainesville than it was in the fall of 1963 when untreated plants were 40-60 percent infested; only 5-15 percent were infested in the fall of 1964. In ALABAMA, pickleworm and MELONWORM (D. hyalinata) infestations occurred on cucurbits.

SQUASH VINE BORER (Melittia cucurbitae) infested cucurbits in ALABAMA and was present but inconspicuous in RHODE ISLAND.

In FLORIDA, CABBAGE LOOPER (Trichoplusia ni) was the main problem on watermelon rinds in the central area. GRANULATE CUTWORM (Feltia subterranea) was not a problem in that area on watermelons and TOBACCO BUDWORM (Heliothis virescens) numbers were greatly reduced on watermelons in central Florida.

STRIPED CUCUMBER BEETLE (Acalymma vittata) in moderate numbers caused moderate damage in Androscoggin and Sagadahoc Counties of MAINE on cucumber and squash in early June. Moderate numbers and damage were noted on cucumbers in Sanford, York County, and Portland, Cumberland County, in mid-July. Striped cucumber beetle was generally present in RHODE ISLAND but less conspicuous than in the previous 2 years. In DELAWARE, adults caused considerable damage to many cucurbits in southwestern Sussex County during May. Adults were lighter than usual in MARYLAND on cucumbers, cantaloups and squash on the Eastern Shore; there was some injury in Anne Arundel County. Unusually high infestations were noted on cucurbits in ALABAMA, especially on commercial cucumbers in the northeastern section.

Striped cucumber beetle adults began appearing about mid-May in WISCONSIN and caused damage to a commercial planting of squash in southern Dane County by feeding on frost-damaged portions of the fruit which permitted entrance of decay microorganisms. Striped cucumber beetle was reported feeding in truck crops and in gardens of MISSOURI. This leaf beetle caused considerable damage to cucumber and cantaloup plantings in the northeastern section of KANSAS. During early June many cantaloup fields in the Arkansas Valley of COLORADO were attacked. Populations varied greatly within fields, but as many as 6 adults per plant could be found in many fields. Control measures were necessary.

SPOTTED CUCUMBER BEETLE (*Diabrotica undecimpunctata howardi*) injured a commercial planting of squash in southern Dane County, WISCONSIN, by feeding on frost-damaged fruit. This leaf beetle caused considerable damage to cucumber and cantaloup plantings in northeastern KANSAS. One heavy infestation was all that was reported in NEW YORK. Spotted cucumber beetle infestations occurred on cucurbits in ALABAMA.

BLISTER BEETLES, mostly CLEMATIS BLISTER BEETLE (*Epicauta cinera*) and *Epicauta* sp. were numerous on melons in the northeastern section of KANSAS during late July.

Adults of SQUASH BEETLE (*Epilachna borealis*) were noted in Peace Dale, Washington County, RHODE ISLAND, June 23. Extremely high populations were reached in the same field in September. This plant-feeding lady beetle is still not present statewide in Rhode Island. Squash beetle adults ranged light to moderate on watermelons in southeastern MISSOURI.

MELON APHID (*Aphis gossypii*) was common on cucurbits in various parts of DELAWARE during July and rather abundant on pumpkin and squash in late July and early August in Sussex County. This aphid was considerably more abundant and widespread than usual in MARYLAND. It heavily injured numerous watermelon, cucumber and cantaloup plantings on the Maryland Eastern Shore during July and August.

APHIDS were present on watermelons in OKLAHOMA during the season. Spring infestations of GREEN PEACH APHID (*Myzus persicae*) occurred during March and April in ARIZONA and were troublesome to melons in Yuma and Maricopa Counties. POTATO APHID (*Macrosiphum euphorbiae*) infested melons locally in Fresno, Sacramento and Siskiyou Counties of CALIFORNIA. Melon aphid infested melons in a few counties also.

GREENHOUSE WHITEFLY (*Trialeurodes vaporariorum*) required constant attention on greenhouse cucumbers in OHIO.

SQUASH BEETLE (*Anasa tristis*) populations were heavy enough for the first time in several years to damage squash in some areas of LOUISIANA. This coreid bug became active in early June in OKLAHOMA but numbers were low until early July. Activity continued in Oklahoma until mid-August. Squash bug was a widespread problem to watermelon and cantaloup producers over TEXAS. Heavy infestations damaged, and in some instances, destroyed squash plants in truck gardens in Quay, Valencia and Dona Ana Counties of NEW MEXICO. This bug caused the usual damage in Washington County, UTAH. Infestations of squash bug were heavy in the southern counties of NEVADA and in Churchill County. Squash bug infestations occurred on cucurbits in ALABAMA. It was heavy on garden squash at several locations on the Eastern Shore of MARYLAND. This species has been neither seen nor reported in RHODE ISLAND for three consecutive years.

LEAF MINER FLIES (*Liriomyza* spp.) were heavy on squash in the Belle Glade area of FLORIDA. Leaf miner flies seemed to be the principal insect pests of cucumbers at Immokalee. At Bradenton, *L. munda* and *L. trifolii* were severe on squash and cucumbers. Leaf miner flies were among the insect pests of importance on watermelon in central Florida.

Other pests of cucurbits included: An EARWIG (Euborellia cincticollis) which caused considerable damage to cantaloups in Imperial County, CALIFORNIA; ONION THRIPS (Thrips tabaci) which caused moderate damage to cucumbers and other crops in OHIO in early summer; SPRINGTAILS which caused extensive damage to squash seeds and seedlings in Providence County, RHODE ISLAND; and SPIDER MITES (Tetranychus spp.) which heavily infested several watermelon fields in western Wicomico County, MARYLAND.

CARROT AND CELERY INSECTS

CARROT RUST FLY (Psila rosae) was generally light in the western part of WASHINGTON but TULIP BULB APHID (Anuraphis tulipae) was abundant on carrots in Walla Walla County in late summer. In WISCONSIN, adults of SIX-SPOTTED LEAFHOPPER (Macrosteles fascifrons) were noted dispersing into carrot fields in mid-June. Populations were generally high but occurrence of yellows was lower than in 1963 in Wisconsin. Local infestations of carrot rust fly occurred on carrots in Humboldt County, CALIFORNIA; this fly is not known to occur in other parts of the State. A WEEVIL (Hyperodes texana) caused heavy damage to carrots in the Rio Grande Valley and in Bexar County, TEXAS.

Adults and nymphs of A CELERY APHID (Aphis heraclella) caused major injury to a field of celery in Allegan County, MICHIGAN, in late August; this was the first record of this aphid in the State. A PYRAUSTID MOTH (Udea profundalis) was a problem on celery locally in Santa Cruz County, CALIFORNIA, in October.

SWEETPOTATO INSECTS

SOUTHERN POTATO WIREWORM (Conoderus falli) and TOBACCO WIREWORM (C. vespertinus) appeared to cause normal amounts of damage to sweetpotatoes observed at the Tabor City auction in NORTH CAROLINA. Some feeding holes were observed but they were not numerous enough to detract from the appearance of the sweetpotatoes. A WIREWORM (Melanotus communis) was apparently responsible for severe damage to sweetpotatoes in a small field near Warsaw, Duplin County, and to 50 percent of a 10-acre field in the Benson-Newton Grove area of Johnston and Sampson Counties. Only a few larvae were collected in each of these North Carolina fields, but most of the damage was old at time of examination in mid-September and October. WIREWORMS were pests of sweetpotatoes in ALABAMA. Tobacco wireworm adult flights were heavy around sweetpotato fields in the middle and south sections of GEORGIA. Tobacco wireworm adults were taken on sticky board traps in sweetpotato fields of LOUISIANA and larvae were recovered in soil samples. C. falli and C. bellus were also taken on sticky boards but no larvae were recovered.

BANDED CUCUMBER BEETLE (Diabrotica balteata) was lighter on sweetpotatoes in LOUISIANA than in any year since 1958. Populations were zero early in the season and ranged up to more than 10 per 100 sweeps in a few fields in late July. Larval injury to roots was correspondingly light. No satisfactory explanation is available to account for the precipitous decline of this pest in Louisiana.

PALE-STRIPED FLEA BEETLE (Systena blanda) was responsible for some injury to sweetpotato roots in a few LOUISIANA fields. FLEA BEETLES were important pests of sweetpotatoes in ALABAMA. SWEETPOTATO FLEA BEETLE (Chaetocnema confinis) was more numerous on sweetpotatoes in VIRGINIA than it had been for several years. Adults of this flea beetle were again destructive to foliage of newly transplanted sweetpotatoes on the lower Eastern Shore of MARYLAND. Larvae of this species were suspected of causing considerable amount of surface injury to sweetpotato roots. Populations ranged from zero to light in most fields on the Eastern Shore with a few counts as high as 500 per 100 sweeps. Root damage in Maryland appeared to be confined to early April plantings.

GOLDEN TORTOISE BEETLE (Metriona bicolor) numbers were about normal on sweetpotatoes in VIRGINIA. Golden tortoise beetle, Agroiconota bivittata and MOTTLED TORTOISE BEETLE (Deloyala guttata) were the tortoise beetle pests of sweetpotatoes in ALABAMA. SWEETPOTATO WEEVIL (Cylas formicarius elegantulus) infestations were light in LOUISIANA during 1964, probably as the result of more effective treatments of the mother beds. This weevil continues to be a problem in some of the coastal counties of ALABAMA. In FLORIDA, sweetpotato weevil was probably more damaging than in previous years on the Boniato variety of sweetpotato.

BLACK CUTWORM (Agrotis ipsilon) caused moderate damage to sweetpotato roots locally in Wicomico County, MARYLAND. Unspecified CUTWORMS were pests of sweetpotatoes in ALABAMA but LEAFHOPPERS were the most important pests of that crop in the State.

STRAWBERRY INSECTS

STRAWBERRY CROWN BORER (Tyloderma fragariae) infestations in MAINE were moderate and caused moderate damage to newly set strawberry plants in Monmouth area, Kennebec County. This weevil was found in a new strawberry planting in the central section of MINNESOTA. Investigation showed that a weed (Potentilla sp.) related to strawberry was probably the original host in that location.

STRAWBERRY WEEVIL (Anthomomus signatus) was an important strawberry pest in NEW YORK but it seemed to be well controlled. Adults of this weevil caused noticeable injury in several strawberry fields in MARYLAND in Prince Georges and Wicomico Counties. A WEEVIL (Sciopithes obscurus) damaged strawberries in southwestern WASHINGTON.

A LEAF BEETLE (possibly Galerucella nymphaeae) caused considerable defoliation of strawberries in the Sand Lake area near the airport at Anchorage, ALASKA. This leaf beetle was also very destructive at the experiment station at College, Alaska.

STRAWBERRY LEAF ROLLER (Ancylis comptana fragariae) adults were flying during good weather periods of early May in Whitman County, WASHINGTON. In CALIFORNIA, a LEAF ROLLER MOTH (Ptycholoma peritana) was a pest of strawberries in Santa Barbara and Fresno Counties. WESTERN TUSSOCK MOTH (Hemerocampa vetusta) damaged strawberries in southern Washoe County, NEVADA, in June. Strawberry leaf roller damaged strawberry plants in Thayer County, NEBRASKA, and moderately damaged one strawberry planting at Wichita, KANSAS. A few light infestations of strawberry leaf roller were reported in north central and southeastern MISSOURI.

Several incidences of STALK BORER (Papaipema nebris) and strawberry leaf roller were detected on strawberries in VIRGINIA.

STRAWBERRY APHID (Pentatrichopus fragaefolii) infestations were heavy in Clark County, WASHINGTON, in early summer. This aphid was medium on strawberries in Orange County, CALIFORNIA, in November. Pentatrichopus sp. and other species were generally light on strawberries in all sections of MARYLAND during the season.

MEADOW SPITTLEBUG (Philaenus spumarius) was common on strawberries on the coastal areas of ALASKA in the southeastern section as usual. This spittlebug has been introduced into the Matanuska Valley near Anchorage but it appears unable to survive the winters. Meadow spittlebug ranged moderate to heavy on unsprayed strawberries in Clark County, WASHINGTON, by early summer. Concentrations were noted in strawberry plantings in Kingston, Washington County, RHODE ISLAND, in June. An unspecified SPITTLEBUG was an important pest of strawberries in NEW YORK, but it seemed to be well controlled. The total damage it caused was estimated to be less than in 1962 or 1963.

TARNISHED PLANT BUG (Lygus lineolaris) was numerous and caused moderate damage to strawberry plantings in Wathena, Doniphan County, KANSAS; more deformed fruit was noted than in several past years. Tarnished plant bug was also important in NEW YORK but it was well controlled on strawberries. An undetermined LYGAEID BUG infested 100 percent of the strawberry plants in an experimental planting in FLORIDA.

GARDEN SYMPHYLAN (Scutigerella immaculata) was very destructive to strawberries in southwestern WASHINGTON. This situation was probably encouraged by the cool, wet season. SLUGS injured strawberries during the cool, wet season in Washington also. Slugs caused considerable damage in an irrigated strawberry planting near Topeka, Shawnee County, KANSAS. These slugs fed on the ripening fruit and left slime on the fruit.

TWO-SPOTTED SPIDER MITE (Tetranychus telarius) was found in a number of strawberry plantings in the Anchorage area and in the Matanuska Valley of ALASKA. CYCLAMEN MITE (Steneotarsonemus pallidus) was a problem on strawberries in Watsonville, Santa Cruz County, CALIFORNIA. This tarsonemid mite was also troublesome in some areas of MINNESOTA where some resistance to some acaricides was evident. Two-spotted spider mite was a problem in strawberry patches in ILLINOIS in 1964. Controls were necessary and generally successful in Illinois. Two-spotted spider mite was extremely troublesome from early summer to frost in MISSOURI; it caused severe damage to strawberries. Unspecified SPIDER MITES were heavy on strawberries in Jefferson County, TEXAS.

Two-spotted spider mite was a strawberry pest at Immokalee, FLORIDA, and unspecified MITES were damagingly present as usual at Homestead. Tetranychus spp. were troublesome on strawberry plantings in Hartford, Prince Georges and Wicomico Counties of MARYLAND. Cyclamen mite was damaging over a widely scattered area of VERMONT on strawberries. This mite was reported on strawberries in MAINE in Franklin County.

FLOWER THRIPS (Frankliniella tritici) was abundant on strawberries in ILLINOIS and damaged as much as 15 percent of the fruit in some fields.

BRAMBLE INSECTS

In RHODE ISLAND, adults of RED-NECKED CANE BORER (Agrilus ruficollis) were moderate and adults of STRAWBERRY WEEVIL (Anthonomus signatus) were common on raspberries in Washington County. The former caused little damage and no complaints from growers. EASTERN RASPBERRY FRUITWORM (Byturus rubi) was very uncommon in plantings where it had been abundant in 1963. Such fluctuations in Rhode Island have been noted previously. In MAINE, moderate infestations of red-necked cane borer caused moderate to heavy damage to raspberries in Farmington and vicinity in midsummer. Heavy numbers of ROSE CHAFER (Macrodactylus subspinosus) caused severe damage to raspberries in Kennebunkport, Maine, in mid-June.

WESTERN RASPBERRY FRUITWORM (Byturus bakeri) was damaging to raspberries and Loganberries in southwestern WASHINGTON during late summer. A LEAF BEETLE (possibly Galerucella nymphaeae) was found feeding on raspberries in a commercial nursery near the airport at Anchorage, ALASKA.

RASPBERRY CROWN BORER (Bembecia marginata) heavily damaged blackberries in Clark County, WASHINGTON, in midsummer. Damage to foliage of raspberries caused by OBLIQUE-BANDED LEAF ROLLER (Archips rosaceanus) was observed in southwestern NORTH DAKOTA. Raspberry crown borer was one of the most serious pests of raspberries in MICHIGAN. First adults of the season in Missaukee County were observed August 18. A considerable flight of adults occurred in Berrien County research plots in late August and early September. Eggs in that part of Michigan did not hatch until late September. RED-HUMPED CATERPILLAR (Schizura concinna) larvae attacked raspberries in East Greenwich, Kent County, RHODE ISLAND, in early August.

TARNISHED PLANT BUG (Lygus lineolaris) was found on raspberries in all areas of VERMONT.

MISCELLANEOUS GARDEN AND TRUCK CROP INSECTS

STALK BORER (Papaipema nebris) was less conspicuous in RHODE ISLAND gardens than in 1963. CABBAGE LOOPER (Trichoplusia ni) averaged slightly higher than usual in MASSACHUSETTS but it was more difficult to control. This noctuid moth was quite serious in PENNSYLVANIA where there was no completely effective control. This pest was very numerous on tomatoes in Sussex County, DELAWARE, during late August and early September. Cabbage looper and TOMATO FRUITWORM (Heliothis zea) were occasionally reported throughout VIRGINIA. Cabbage looper ranged light to moderate in GEORGIA. There was an average infestation of H. zea on sweet corn at Zellwood, FLORIDA, during the spring. At Gainesville, infestations on untreated sweet corn ranged 91.5 percent on June 12 to 88 percent on July 10 in a different field. FALL ARMYWORM (Spodoptera frugiperda) was severe in the fall in Palm Beach County on sweet corn. It became less abundant as winter approached in that part of Florida.

Tomato fruitworm was a problem on fall grown okra in ARKANSAS but infestations of cabbage looper were normal in that State except for high populations in green crops later in the season. Disease was important in reducing infestations in Arkansas. CUTWORMS caused considerable damage to gardens in some areas of OKLAHOMA during March; tomato fruitworm was also present in the State. Tomato fruitworm was generally present on commercial and home vegetables over TEXAS and TOBACCO BUDWORM (Heliothis virescens) was reported in sesame in Brazos County.

GARDEN WEBWORM (Loxostege similalis) and cutworms were reported feeding on truck crops and in gardens in MISSOURI. Cabbage looper was abundant in many fields in OHIO; control measures were inadequate. Various cutworms caused greater than usual injury during late May continuing through mid-June in MICHIGAN on field and vegetable crops. A light but extremely early flight of cabbage looper adults occurred in southwest Michigan in July. The first general flight of adults from southern areas, as evidenced by blacklight trap collections, took place in early August. High larval populations were widespread in August and September in Michigan. Cutworms caused some concern to home gardeners statewide in NORTH DAKOTA.

BEET ARMYWORM (Spodoptera exigua) was widespread on many truck crops in CALIFORNIA and cabbage looper was statewide and persisted until winter. BLACK CUTWORM (Agrotis ipsilon) was particularly troublesome in Orange, San Luis Obispo, Butte and San Diego Counties of California. The first tomato fruitworm adults in WASHINGTON were trapped June 12 in the lower Yakima Valley and on June 4 in Grant County. Larvae became unusually abundant by mid-August. Populations were heavier than in the previous 3 years in Washington.

Cutworms, primarily RED-BACKED CUTWORM (Euxoa ochrogaster), were very destructive to vegetable crops in ALASKA for the first time in about 5 years. These cutworms were generally destributed about the Matanuska Valley and in the Cook Inlet area. Other species were found in much lower numbers. Blacklight traps do not attract many of the economic species in Alaska. Evidently most of the flight period occurs during the period of maximum daylight, since many other species are collected in large numbers up until mid-May and again after mid-July.

VEGETABLE WEEVIL (Listroderes costirostris obliquus) was locally heavy in vegetable plantings in Stanislaus County, a LEAF BEETLE (Gastrophysa cyanea) was locally damaging to rhubarb in Sonoma County and another LEAF BEETLE (Diabrotica sp.) was a pest statewide in CALIFORNIA. New adults of a WEEVIL (Nemocestes incomptus) began emerging in late October in WASHINGTON and insecticide treatments applied at that time appeared promising; earlier treatments with some insecticides did not prove effective.

POTATO FLEA BEETLE (Epitrix cucumeris) numbers were relatively light in NORTH DAKOTA. Large numbers of SEED-CORN BEETLE (Agonoderus lecontei) were found around lights at night in Cheyenne County, NEBRASKA, in July. BLISTER BEETLES, FLEA BEETLES and SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata howardi) were reported feeding on truck crops and in gardens in MISSOURI. Several species of blister beetles damaged gardens in many areas of OKLAHOMA from mid-July until mid-September.

RHUBARB CURCULIO (Lixus concavus) feeding scars were found on rhubarb petioles in Auburn, Androscoggin County, MAINE, but the damage was light; no adults were in evidence in mid-June. Potato flea beetle was generally present in RHODE ISLAND, but probably less heavy in well-sprayed fields than it was in 1963. Rhubarb curculio was occasionally reported throughout VIRGINIA. Unspecified WIREWORMS were reported decimating portions of some sweet corn stands in the Homestead area of FLORIDA in January. Five larvae were found under one wilting corn plant about 4 inches high.

APHIDS were generally low in numbers on most vegetables in ALASKA. MELON APHID (Aphis gossypii) was heavier than normal and required repeated controls in truck crops in Yuma and Maricopa Counties, ARIZONA; peak populations were reached during March and April. Several species of aphids were generally present on commercial and home vegetables over TEXAS. Reports of injury by GREEN PEACH APHID (Myzus persicae) were relatively few in MICHIGAN. Green peach aphid was occasionally reported throughout VIRGINIA in 1964.

SIX-SPOTTED LEAFHOPPER (Macrosteles fascifrons) adults were collected during the week ending May 29 in Allegan, Livingston and Monroe Counties of MICHIGAN. Symptoms of yellows on susceptible plants were first observed June 11 in Livingston County. Commercial problems caused by this disease were very low in Michigan. This leafhopper migrated from southern areas in large numbers in MINNESOTA and vegetable growers applied control measures to avoid yellows. Migration occurred the first week of May; populations increased in May and remained high throughout the season. Yellows disease was present in truck crops and flax but at a low level in Minnesota. POTATO LEAFHOPPER (Empoasca fabae) numbers were relatively light in NORTH DAKOTA. LEAFHOPPERS required control on many truck crops in CALIFORNIA and BEET LEAFHOPPER (Circulifer tenellus) required some control by growers in Riverside, Los Angeles and Kern Counties in addition to the State control programs. Leafhoppers were generally low on most vegetable crops in ALASKA.

PLANT BUGS were present on vegetables in OKLAHOMA and TARNISHED PLANT BUG (Lygus lineolaris) was present on many vegetables in DELAWARE during June and July. GARDEN FLEAHOPPER (Halticus bracteatus) was reported feeding on truck crops and in gardens in MISSOURI.

A LEAF MINER FLY (Agromyza sp.) was present in almost all vegetable-growing areas of CALIFORNIA. In PENNSYLVANIA, several species of ROOT MAGGOTS continued to show considerable resistance to most chemicals and became a definite problem.

GRASSHOPPER infestations were heavy on vegetables in Hastings area of Dakota and Washington Counties, MINNESOTA, and controls were required at Rochester, Olmsted County. Grasshoppers were feeding on truck crops of MISSOURI and OKLAHOMA. A FIELD CRICKET (Gryllus sp.) was locally heavy in some truck crops of Imperial County, CALIFORNIA.

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